

FIGURES

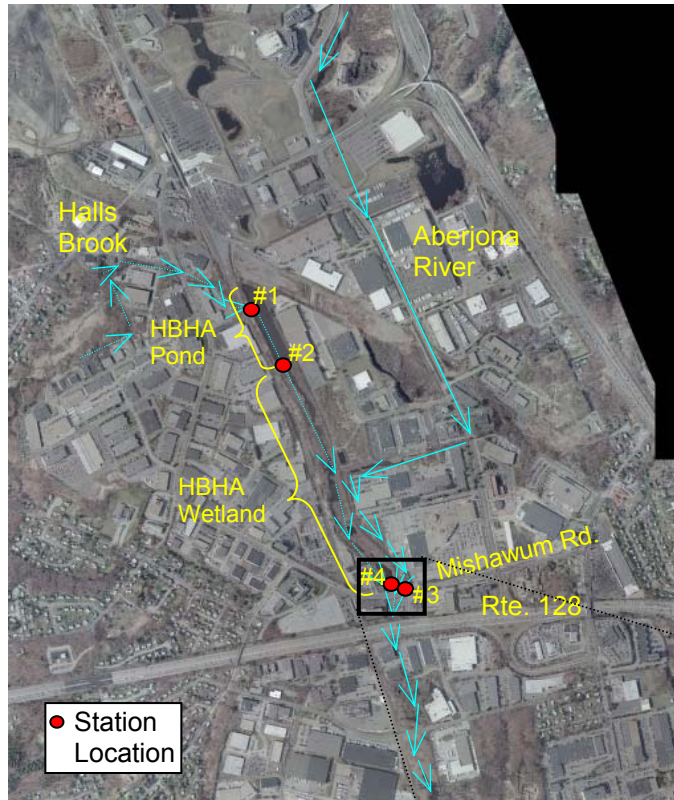
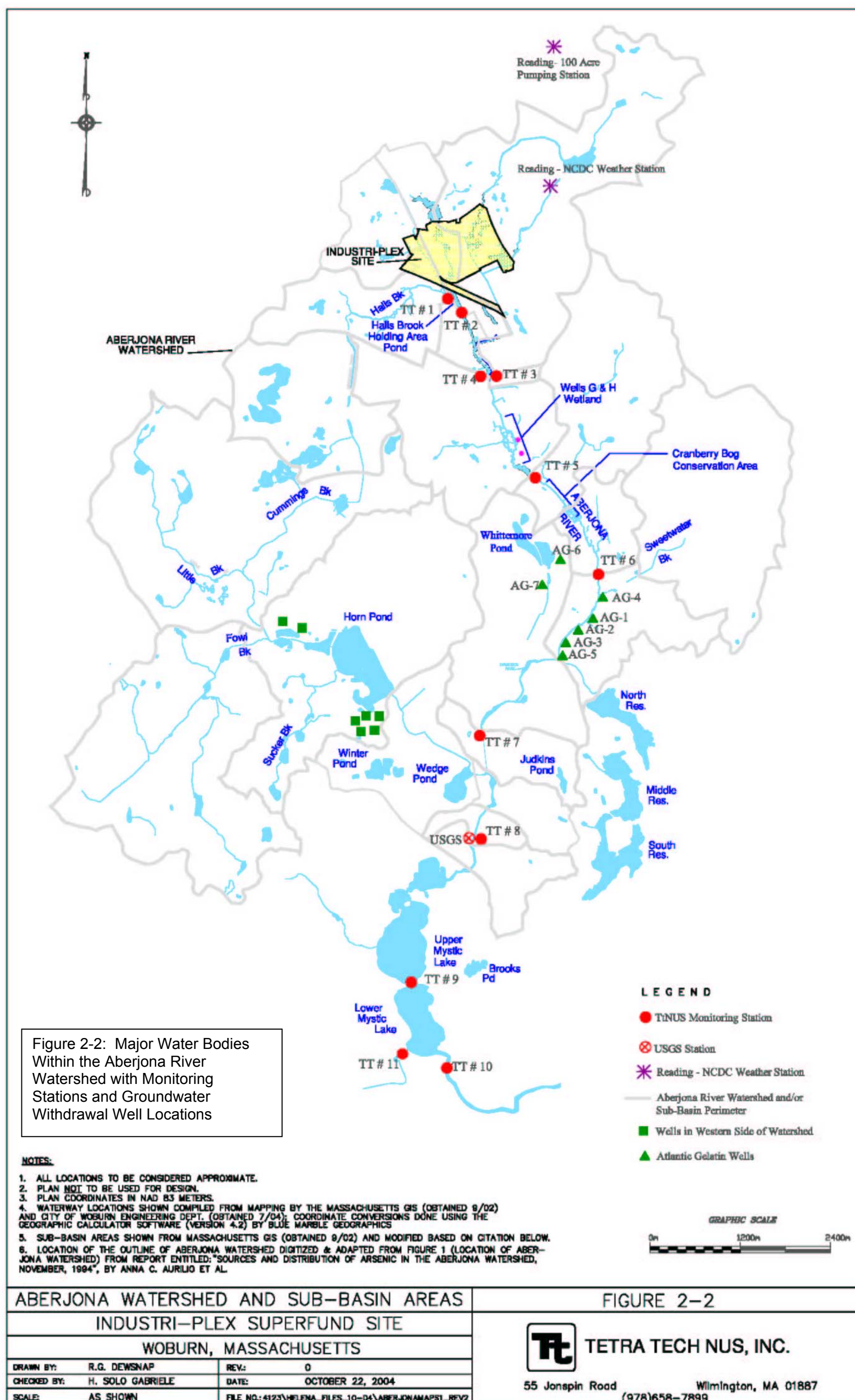


Figure 2-1a: Close-up Locations for Stations 1 through 4



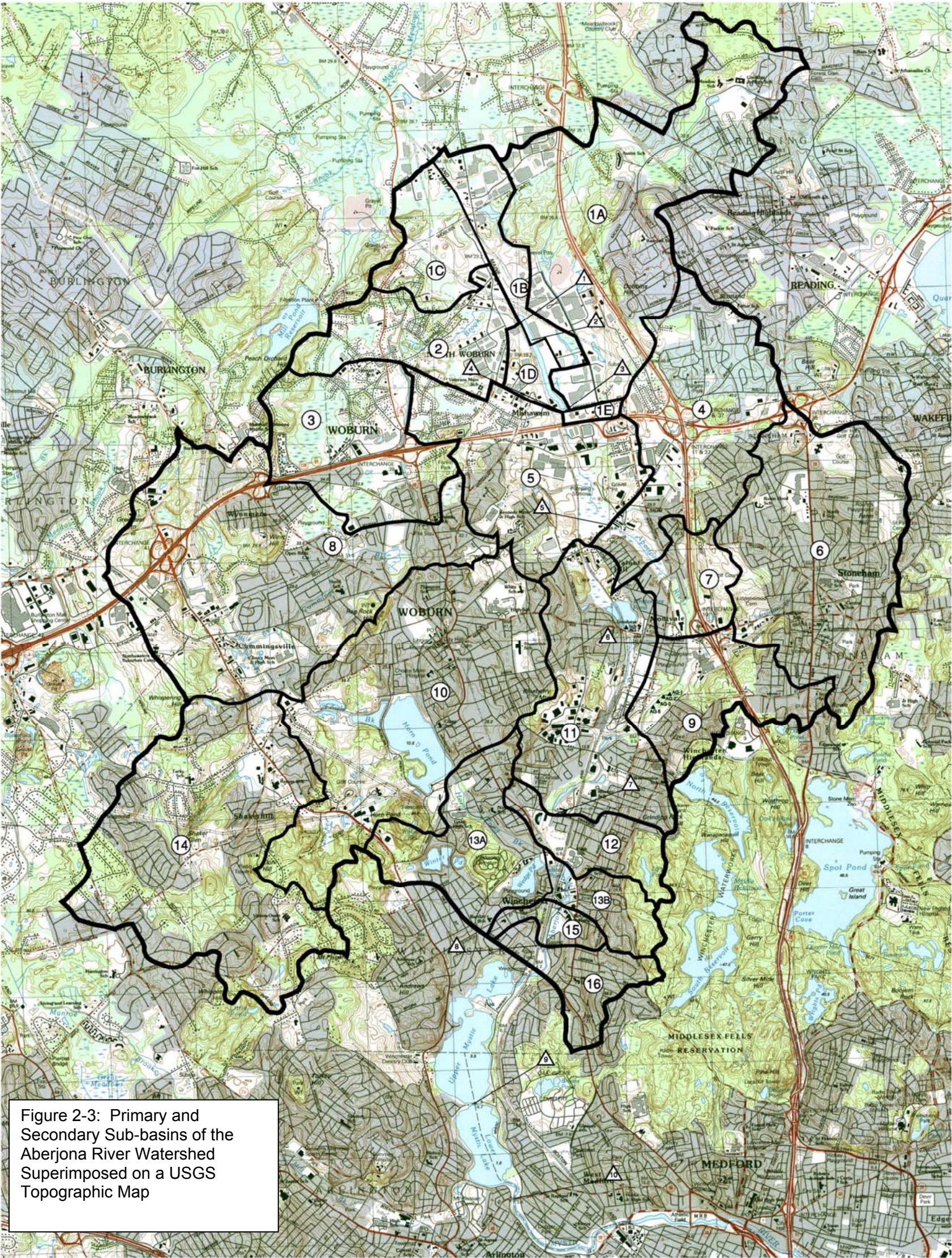


Figure 2-3: Primary and Secondary Sub-basins of the Aberjona River Watershed Superimposed on a USGS Topographic Map

Sub-Basin ID	1A	1B	1C	1D	1E	2	3	4	5	6	7	8	9	10	11	12	13A	13B	14	15	16	TOTAL
Sub-Basin Area	6.921	1.165	1.376	0.443	0.122	2.136	3.109	4.139	3.779	5.395	1.124	7.663	2.193	7.310	4.013	1.152	2.414	0.859	6.914	0.441	1.114	63.802

Distance Between Sampling Stations (km)	1 to 2	2 to 3/4	3/4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	TOTAL
Length of River Between Stations (km)	0.288	0.927	1.574	1.783	2.945	1.659	2.658	1.366	13.200

LEGEND

ABERJONA WATERSHED PERIMETER (APPROX.)

SUB-BASIN AREAS OF ABERJONA WATERSHED (APPROX.)

SUB-SUB-BASIN AREAS OF ABERJONA WATERSHED (APPROX.)

PRODUCTION WELL

NOTES:

1. ALL LOCATIONS TO BE CONSIDERED APPROXIMATE.
2. PLAN NOT TO BE USED FOR DESIGN.
3. USGS MAPPING FROM MASSACHUSETTS GIS, NAD 83, IN METERS (OBTAINED 9/02).
4. SUB-BASIN AREAS SHOWN FROM MASSACHUSETTS GIS (OBTAINED 9/02).
5. LOCATION OF THE OUTLINE OF ABERJONA WATERSHED ADAPTED FROM FIGURE 1 (LOCATION OF ABERJONA WATERSHED) FROM REPORT ENTITLED "SOURCES AND DISTRIBUTION OF ARSENIC IN THE ABERJONA WATERSHED, NOVEMBER, 1994", BY ANNA C. AURILIO ET AL.

DRAWN BY: D.W. MACDOUGALL
PREPARED BY: J. DANIEL
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PROJECT MANAGER: G. BULLARD
PROGRAM MANAGER: G. GARDNER

TITLE: ABERJONA WATERSHED AND SUB-BASIN AREAS
INDUSTRI-PLEX SUPERFUND SITE
WOBBURN, MASSACHUSETTS
SOURCE: MASSACHUSETTS GIS
SCALE: AS SHOWN
DATE: JULY 29, 2004
DRAFT NAME: ABERJONA_WATERSHED
FIGURE 1

PROJ. NO:
4123
REV:
3

TETRA TECH NUS, INC.

55 JOHNSON ROAD
WILMINGTON, MASSACHUSETTS 01897
(978)658-7899



Figure 2-4: Photograph of Typical Monitoring Station

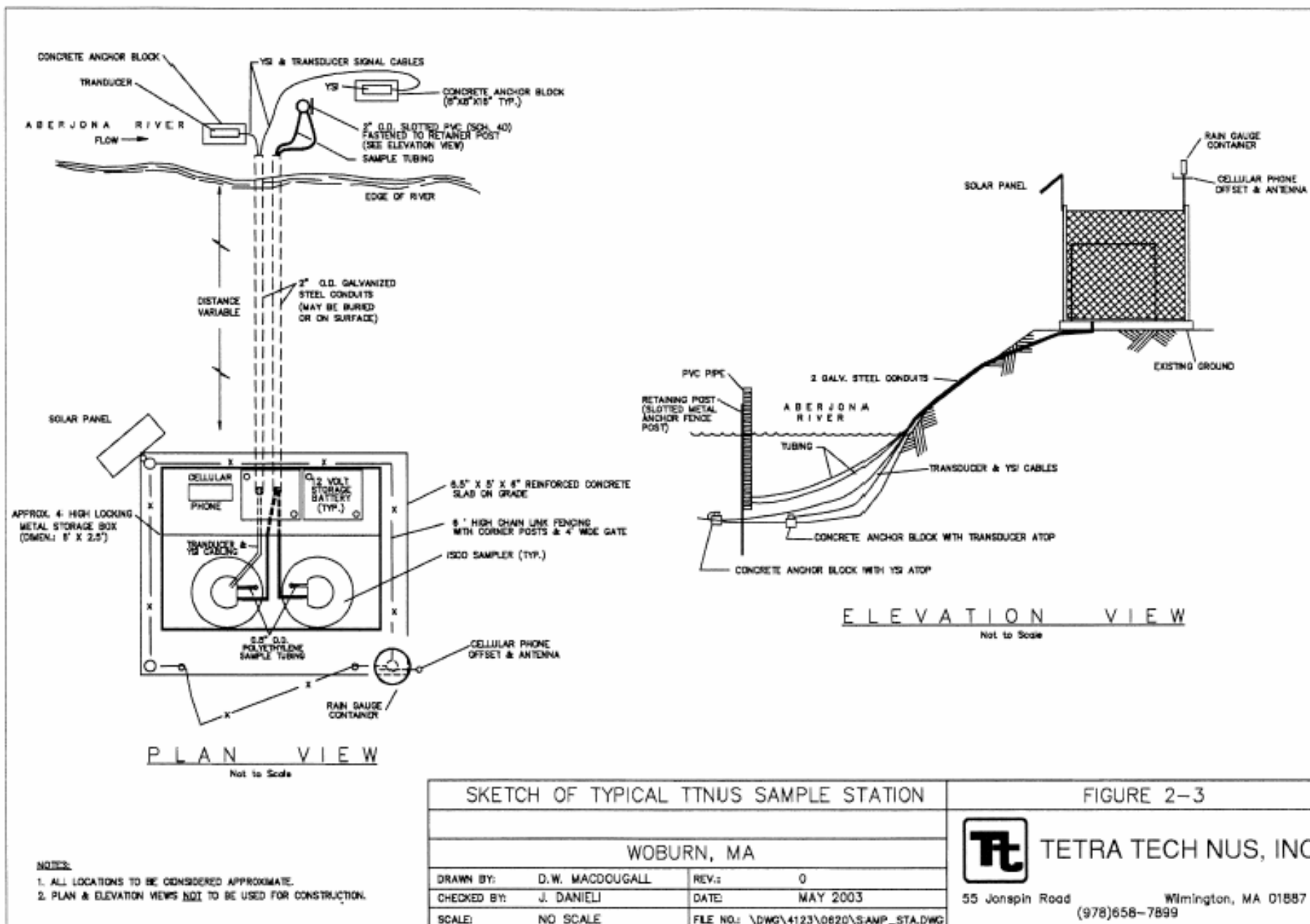


Figure 2-5: Sketch of Equipment at a Typical TtNUS Monitoring Station

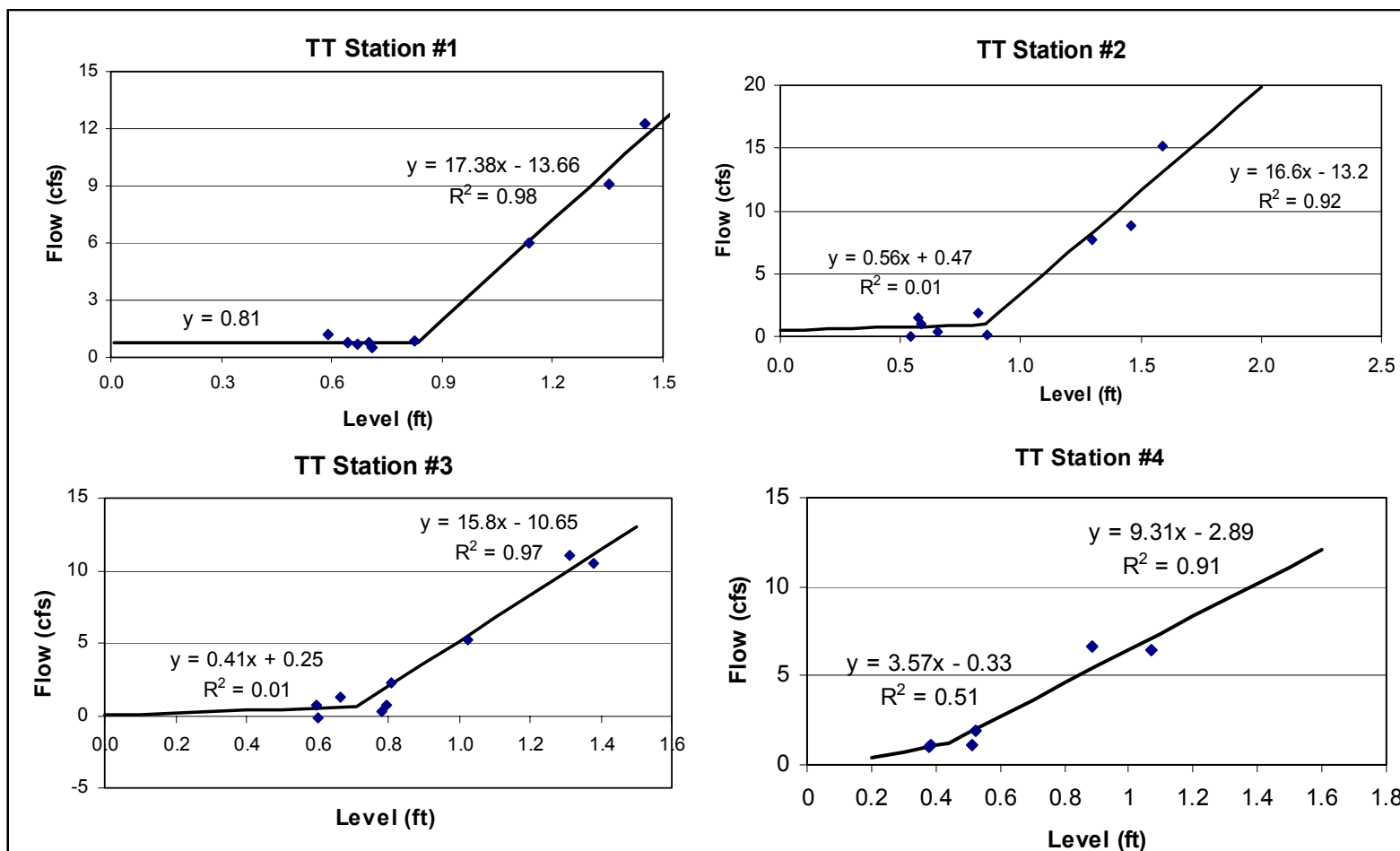


Figure 2-6: Rating Curves for Stations 1 through 4

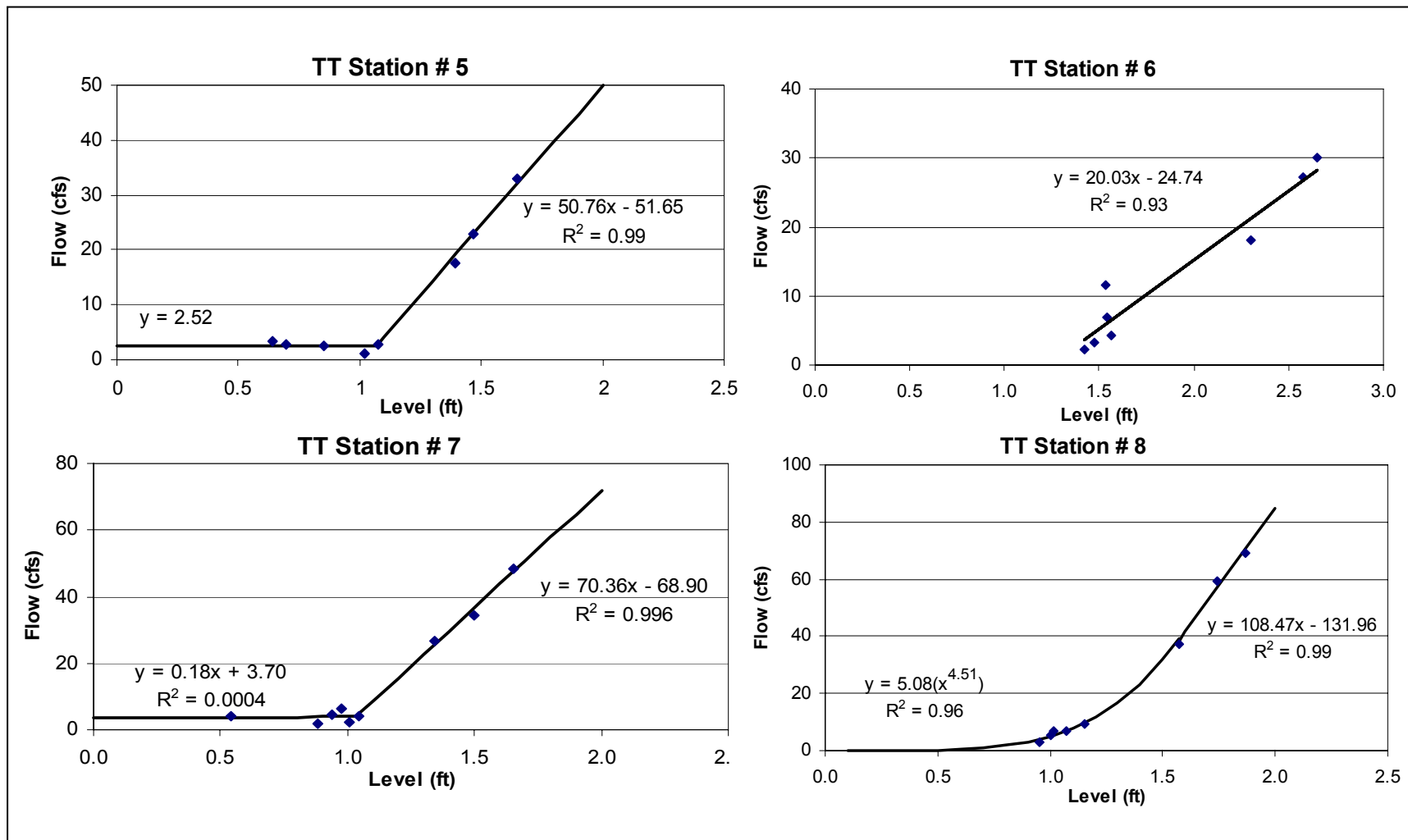


Figure 2-7: Rating Curves for Stations 5 through 8

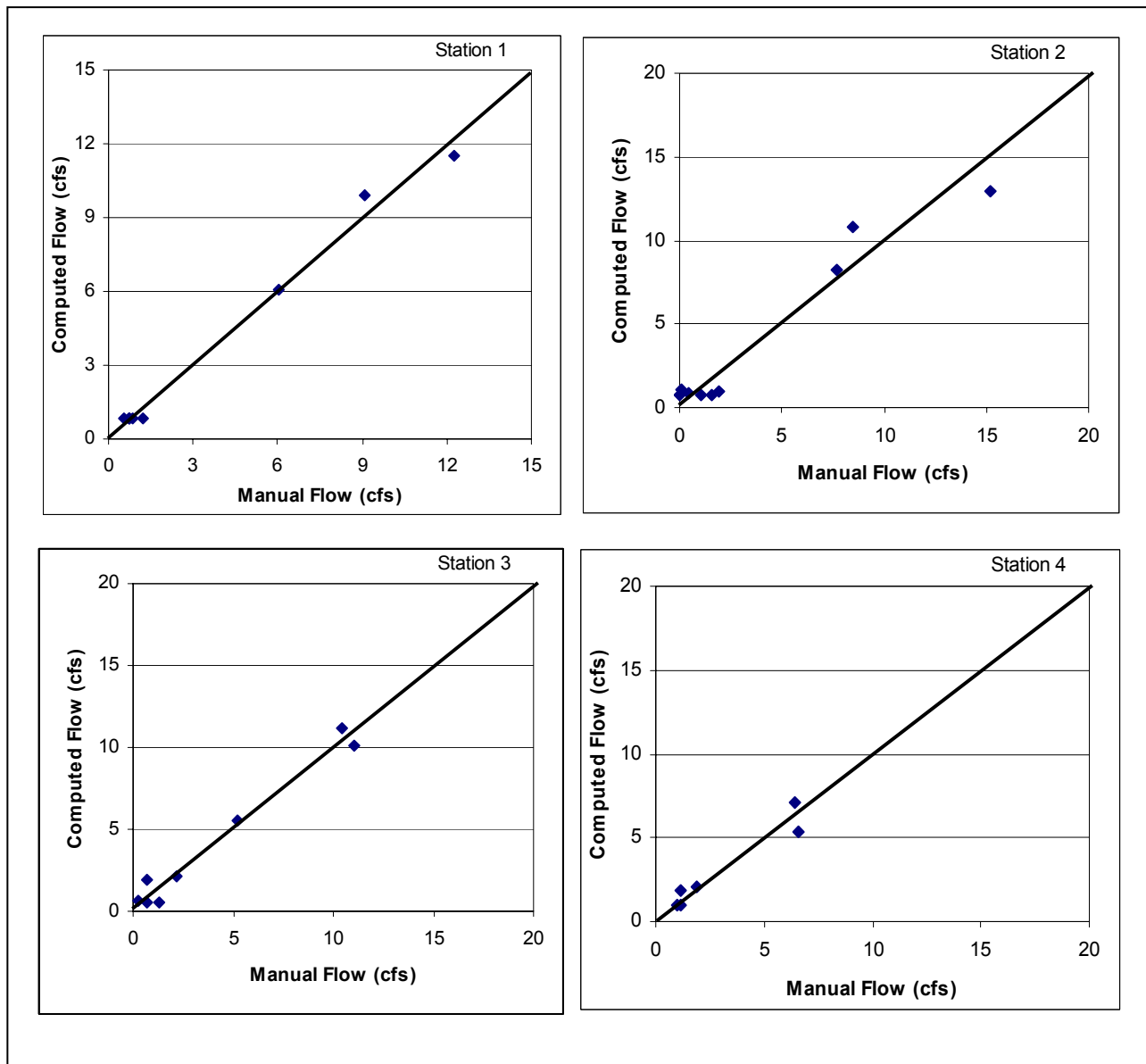


Figure 2-8: Manual Versus Computed Flow for Stations 1 through 4

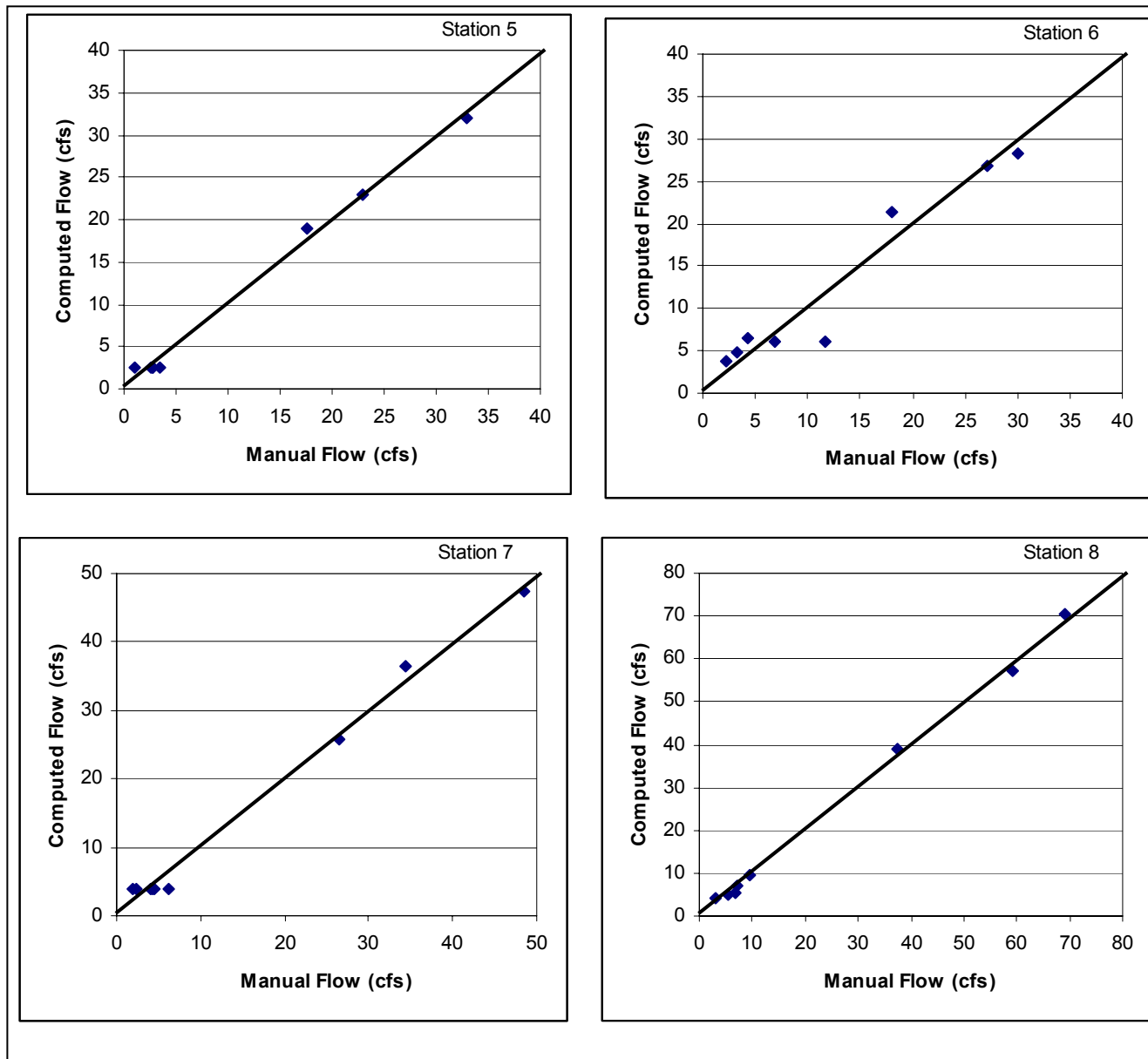


Figure 2-9: Manual Versus Computed Flow for Stations 5 through 8

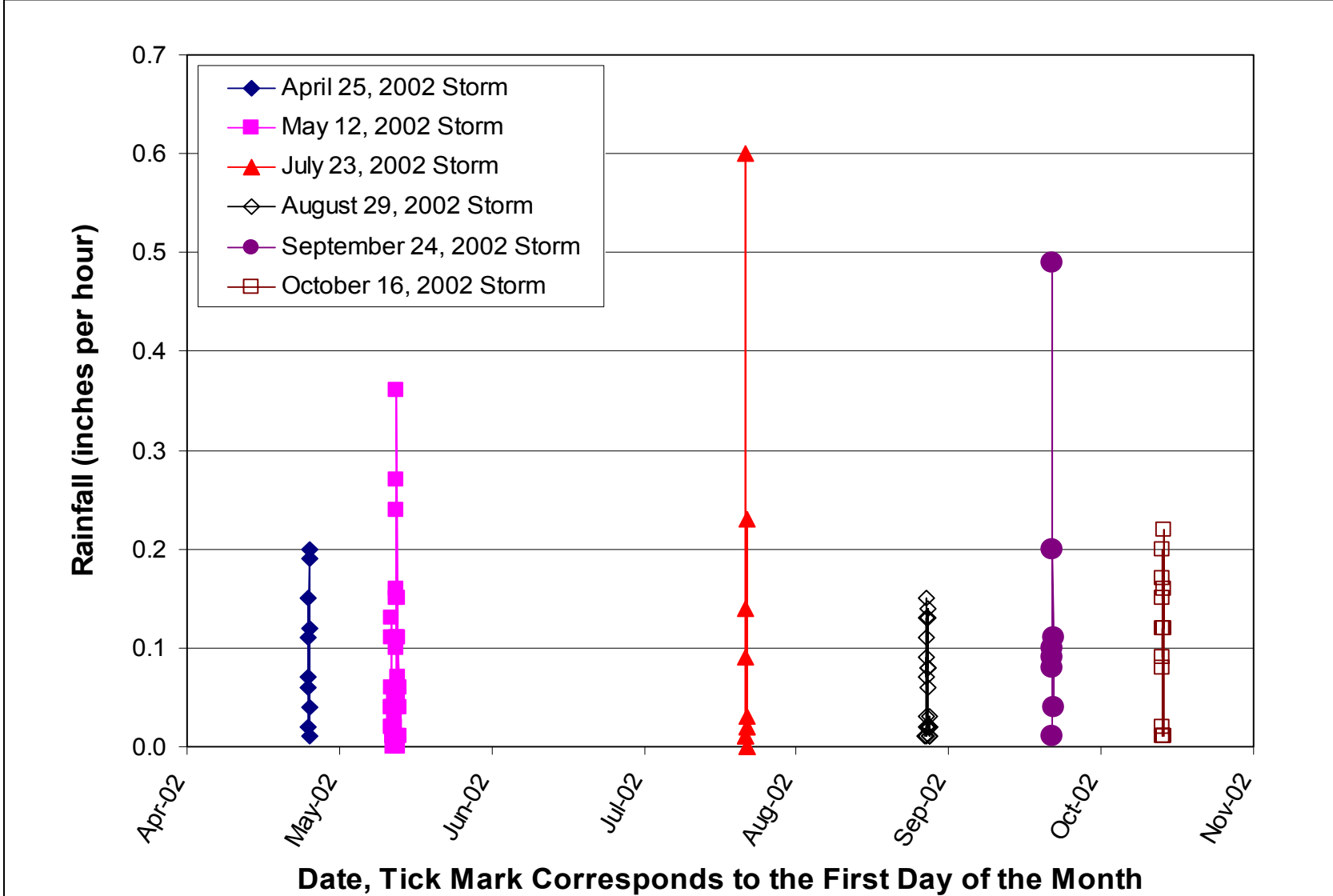


Figure 2-10: Hourly Rainfall Summary for Storm Events as Recorded at the Reading – NCDC Weather Station (Each Symbol Represents Rainfall Accumulations Over A Hour Period During the Storm Event)

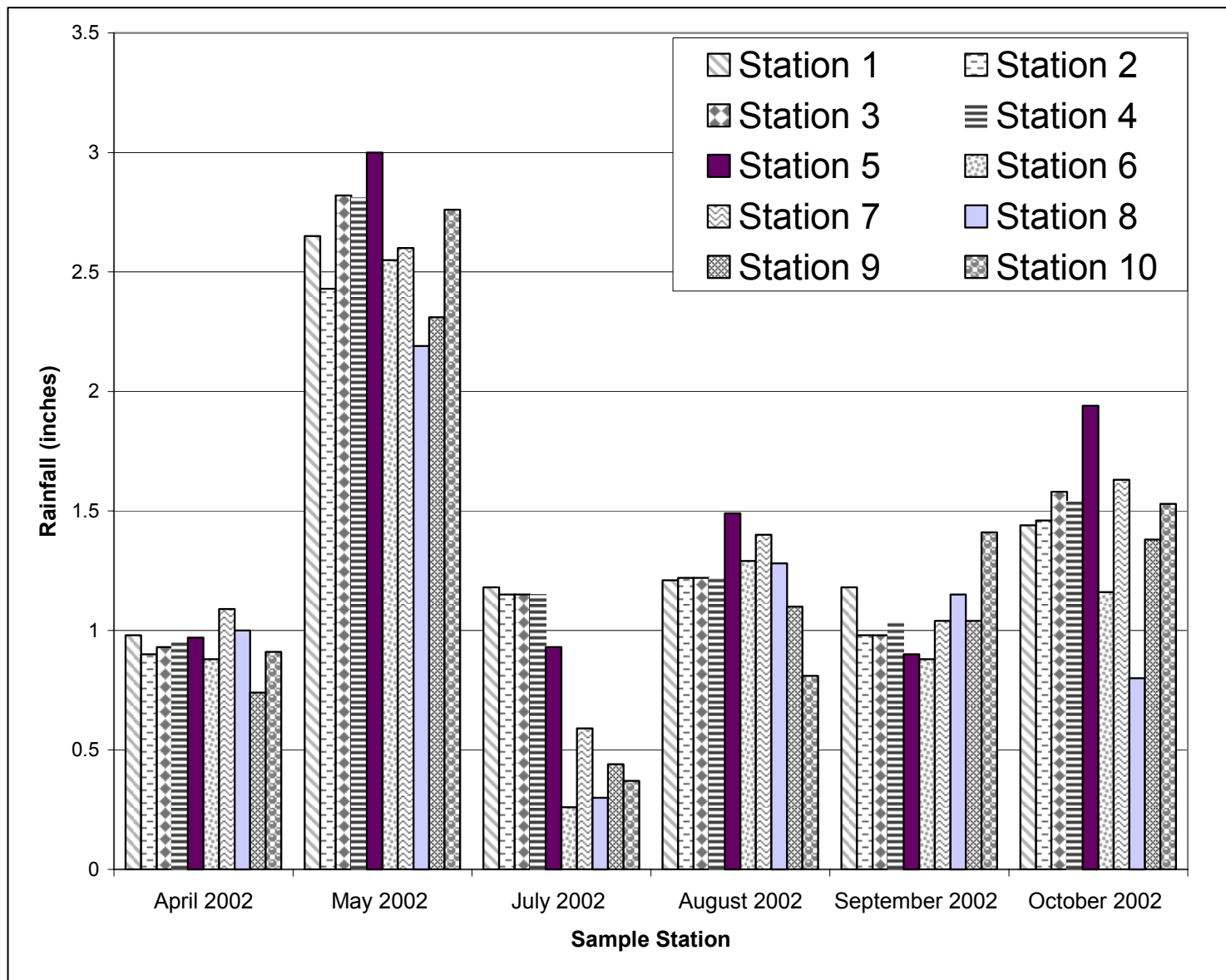


Figure 2-11: Distribution of Total Rainfall per Sample Station for each Storm Event

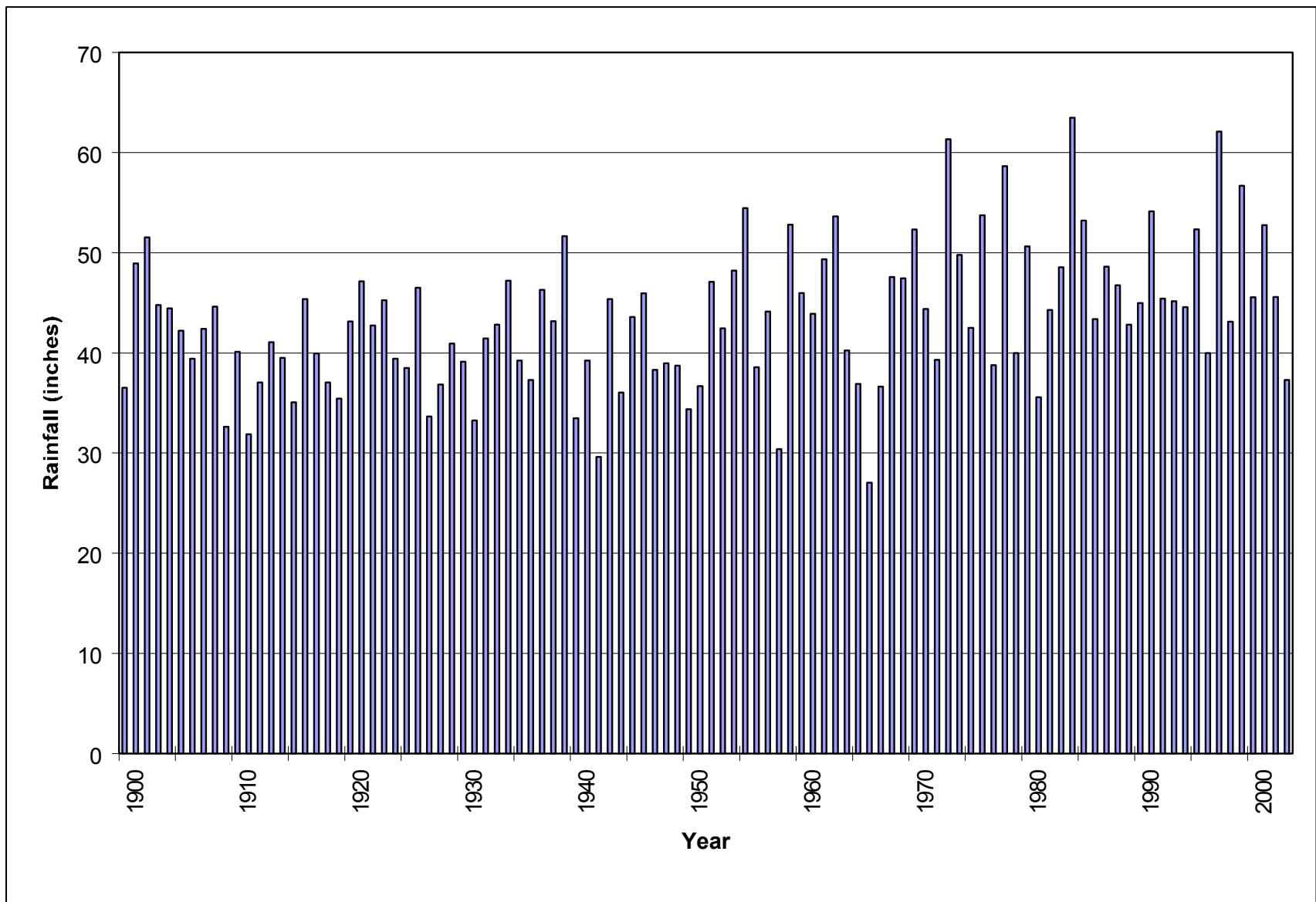


Figure 3-1: Yearly Rainfall from 1899 through 2002 Recorded at the Reading Weather Stations

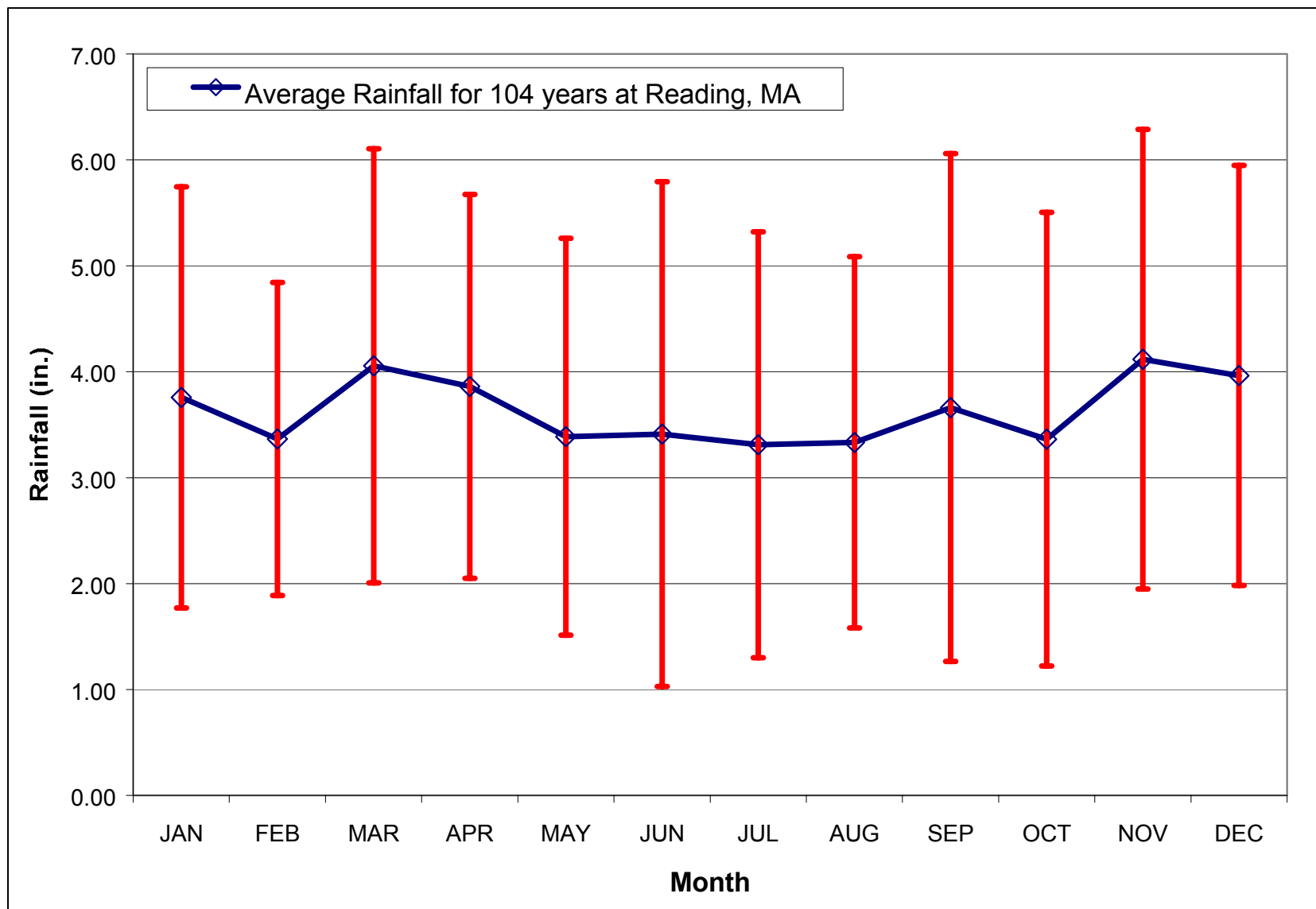


Figure 3-2: Monthly Average Rainfall with Standard Deviations Recorded at the Reading Weather Station for the 1899 to 2002 Period of Record

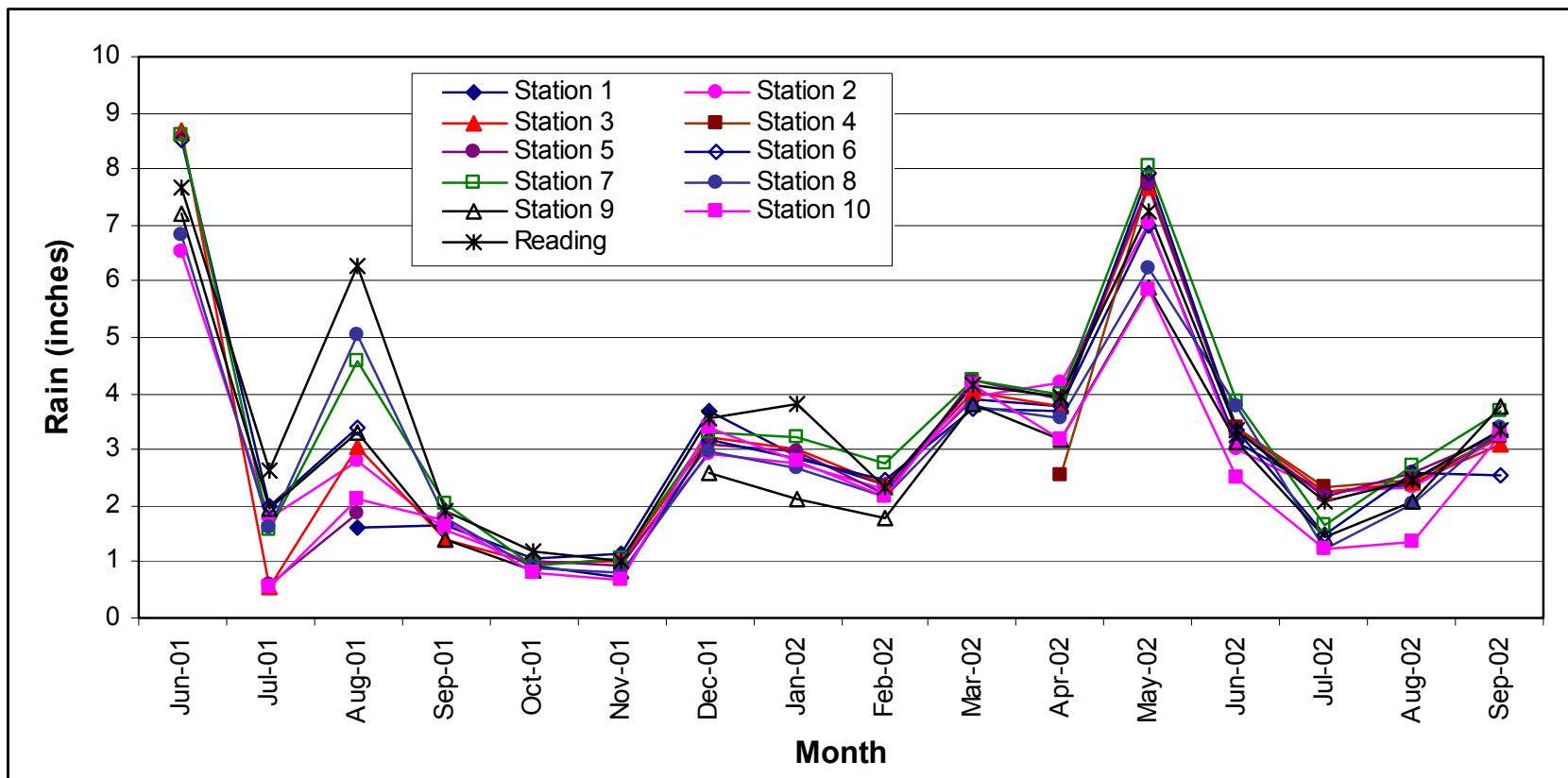


Figure 3-3: Total Monthly Rainfall for each TtNUS Monitoring Station.
(Raw data. No substitutions with rainfall from adjacent stations.)

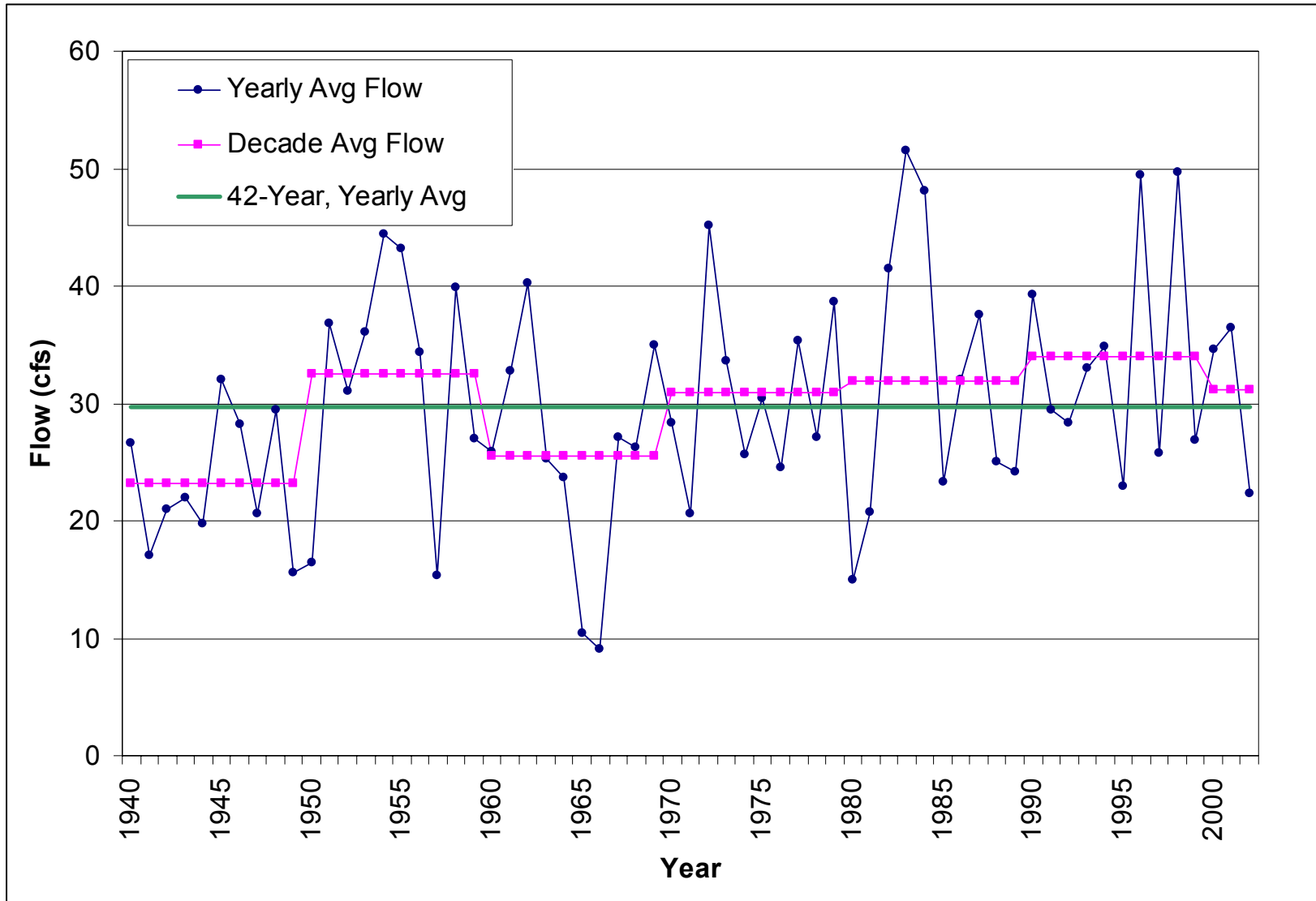


Figure 3-4: Yearly Average Streamflow as Measured at the USGS Aberjona River Gaging Station

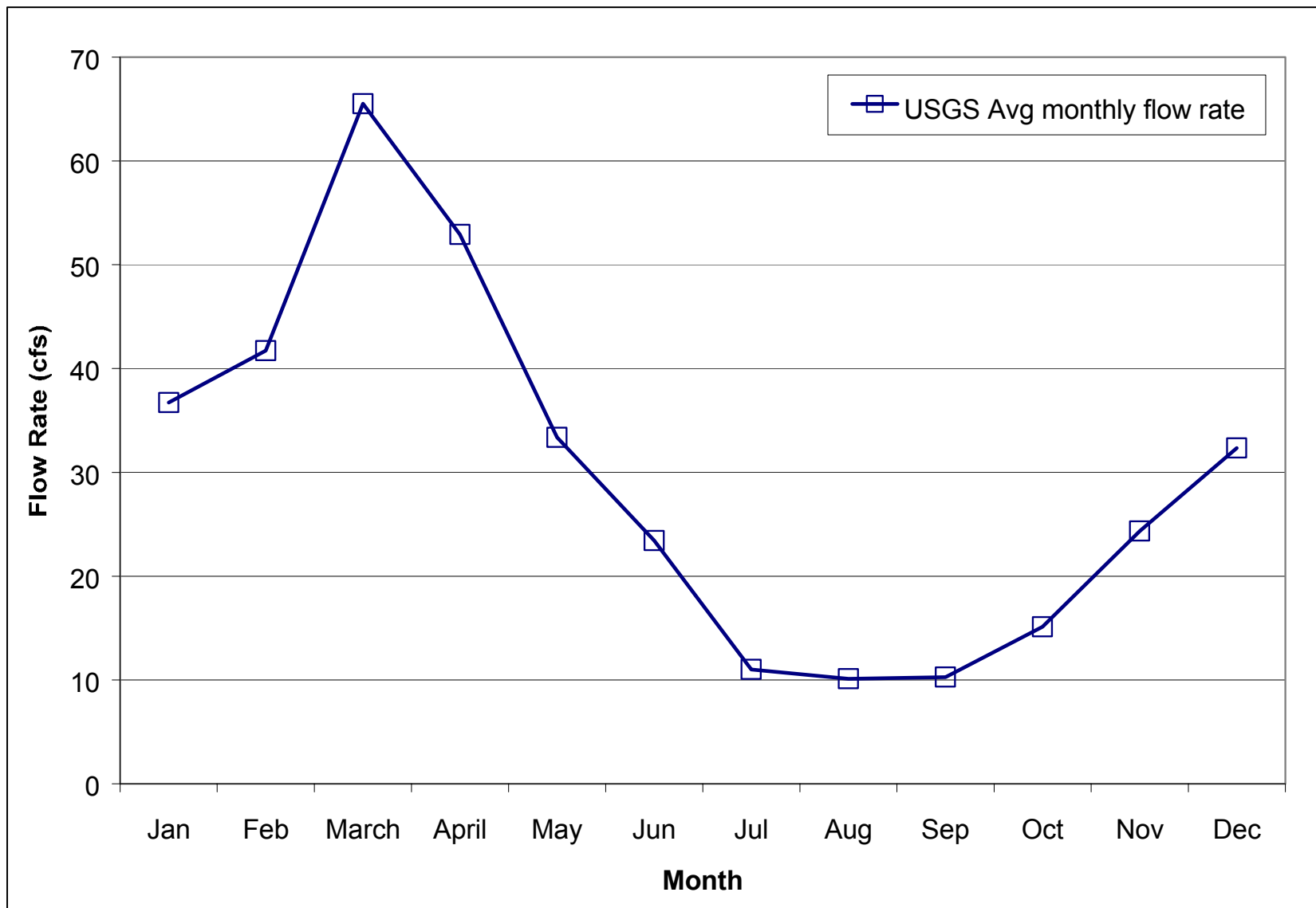


Figure 3-5: Average Monthly Flow of the Aberjona River Recorded at the USGS Monitoring Station from 1940 through 2002

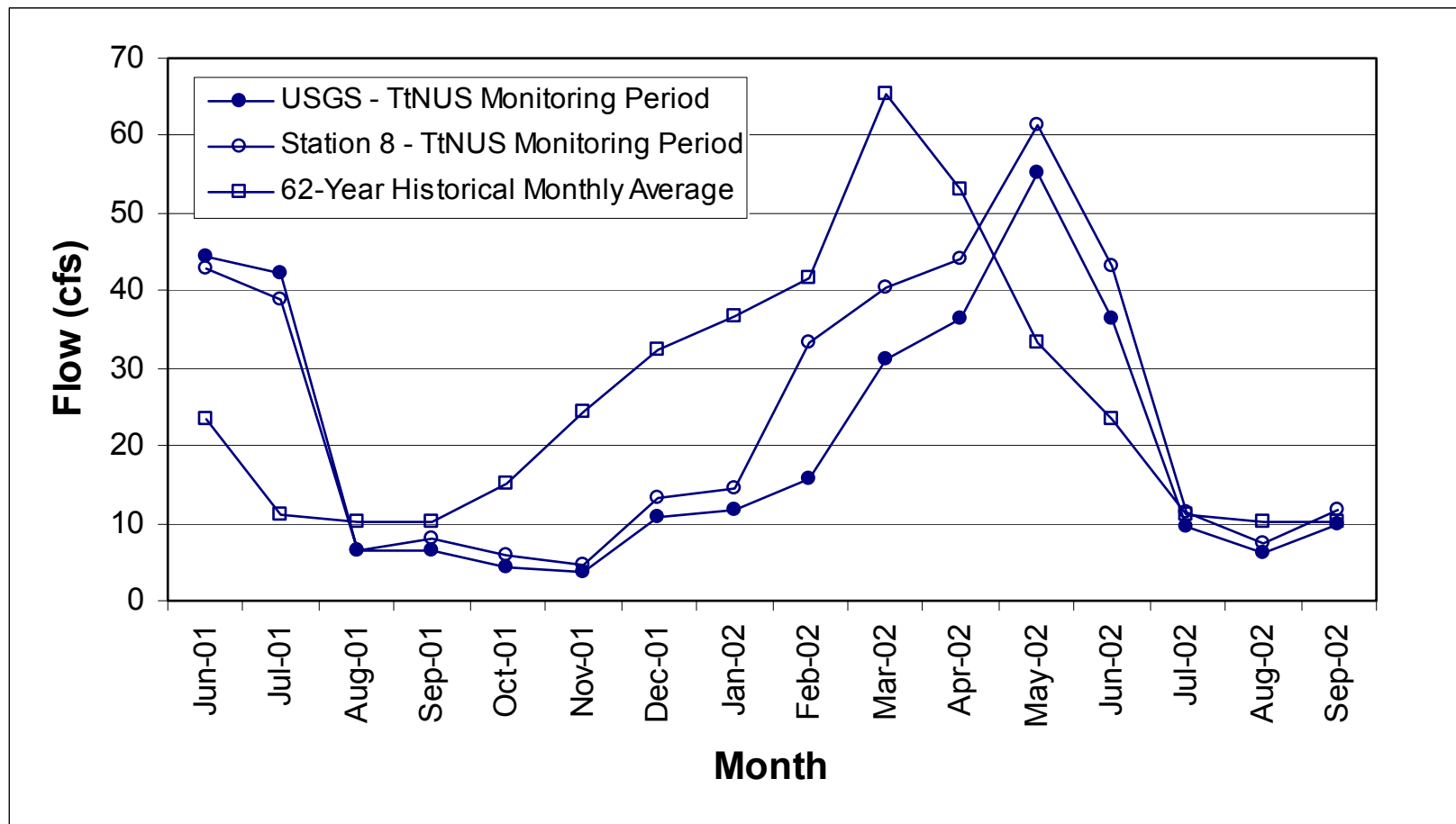


Figure 3-6: Comparison of Monthly Average Streamflow Between the Data Recorded at the USGS Monitoring Station and the TtNUS Station 8 (Data plotted as circles correspond to a consistent period of record for both stations)

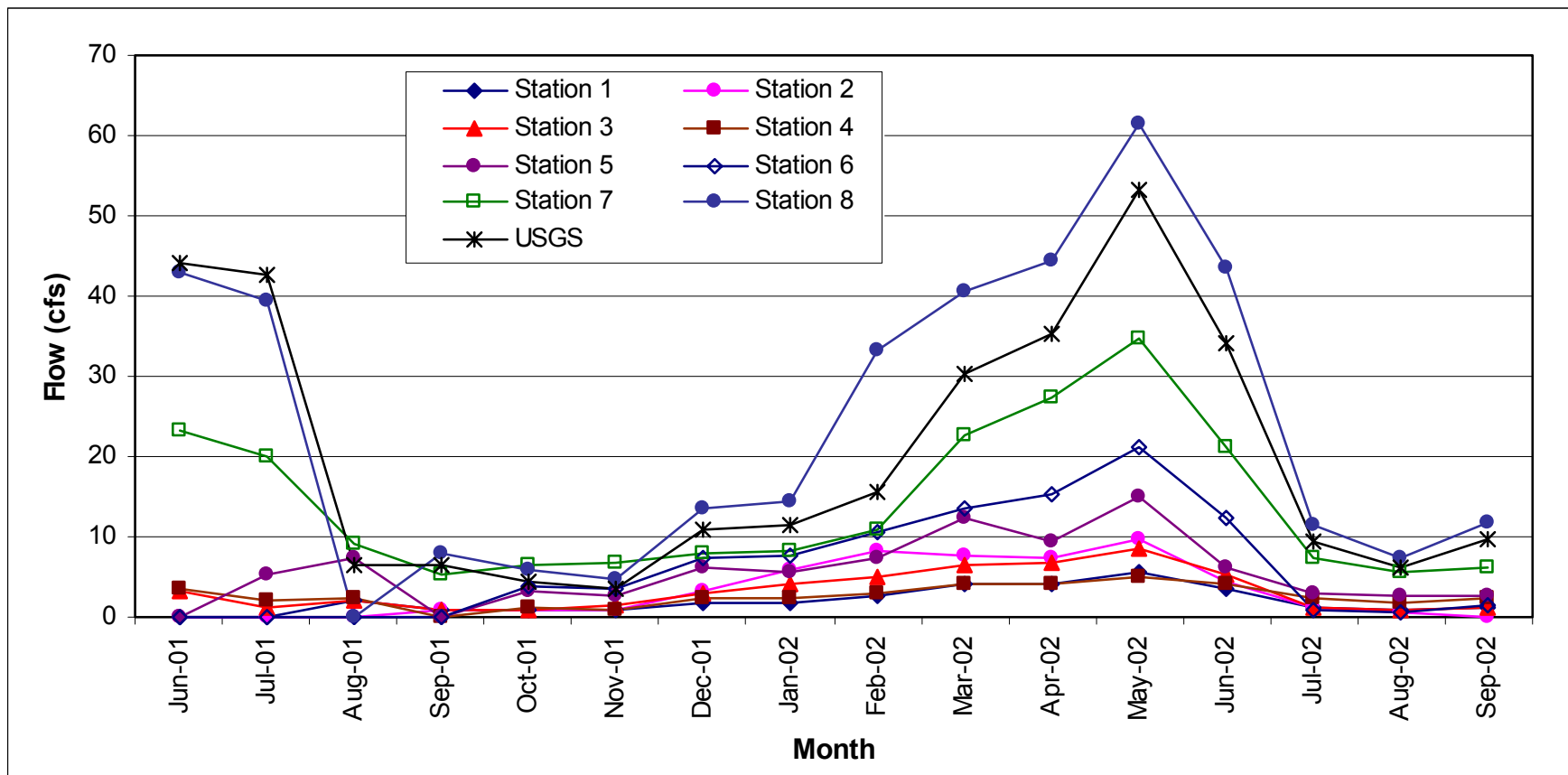


Figure 3-7: Average Monthly Streamflow as Recorded at the USGS Station and Each of the 8 TtNUS Monitoring Stations

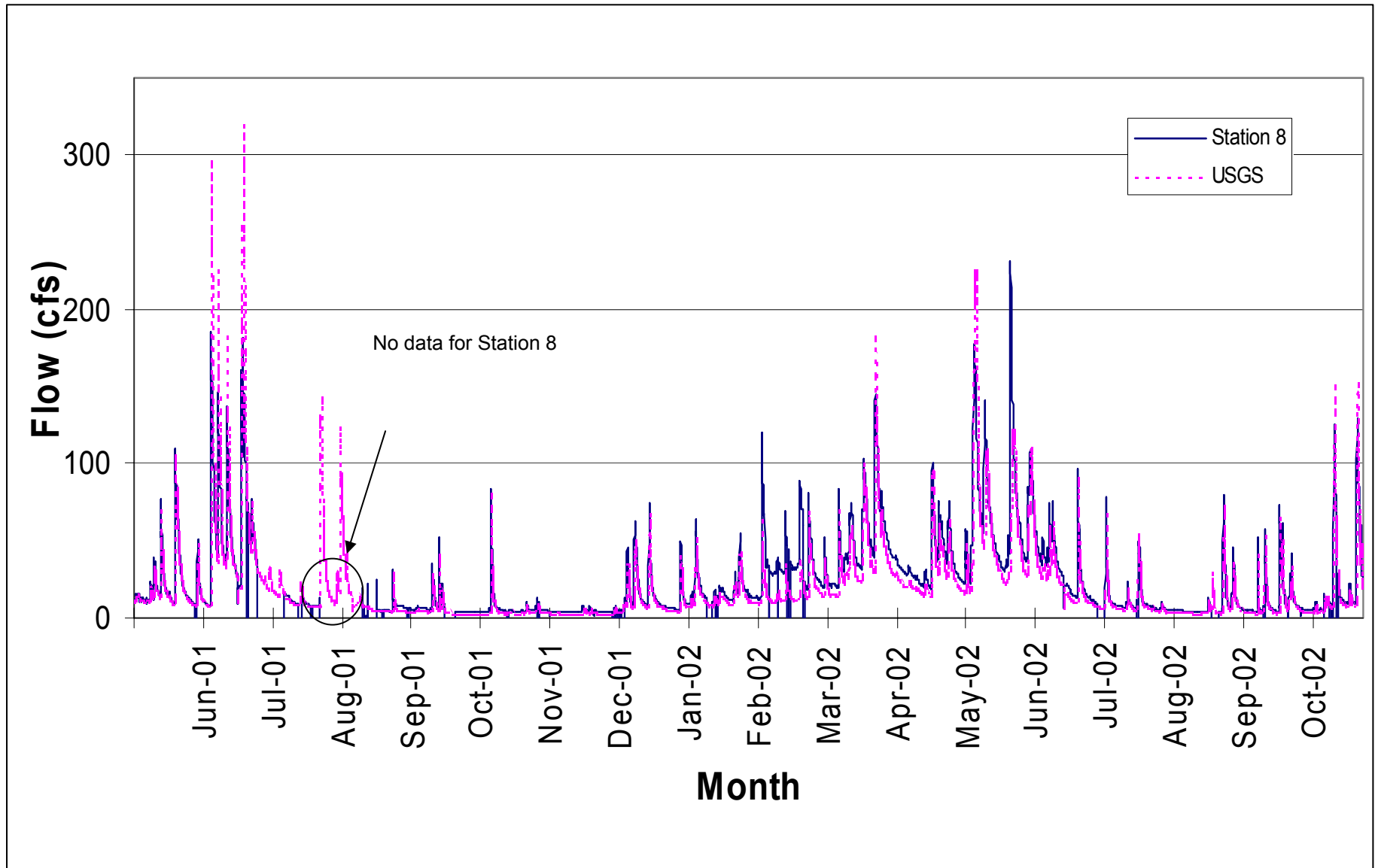


Figure 3-8: Hourly Streamflow at the USGS Station and at TtNUS Station 8 for Entire Period of Record

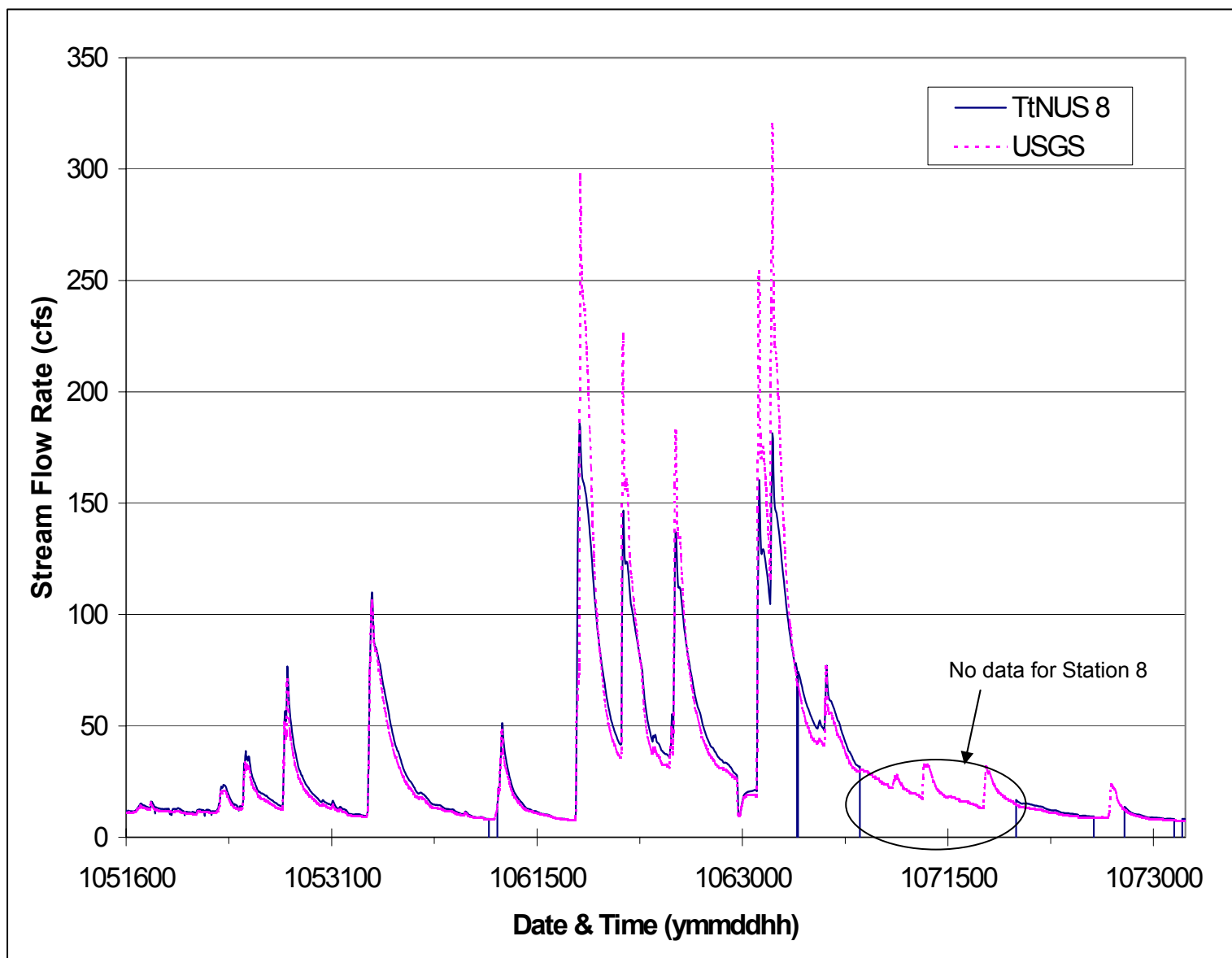


Figure 3-9: Hourly Streamflow at the USGS Station and at TtNUS Station 8 for the May 15, 2001 to August 1, 2001 Period of Record

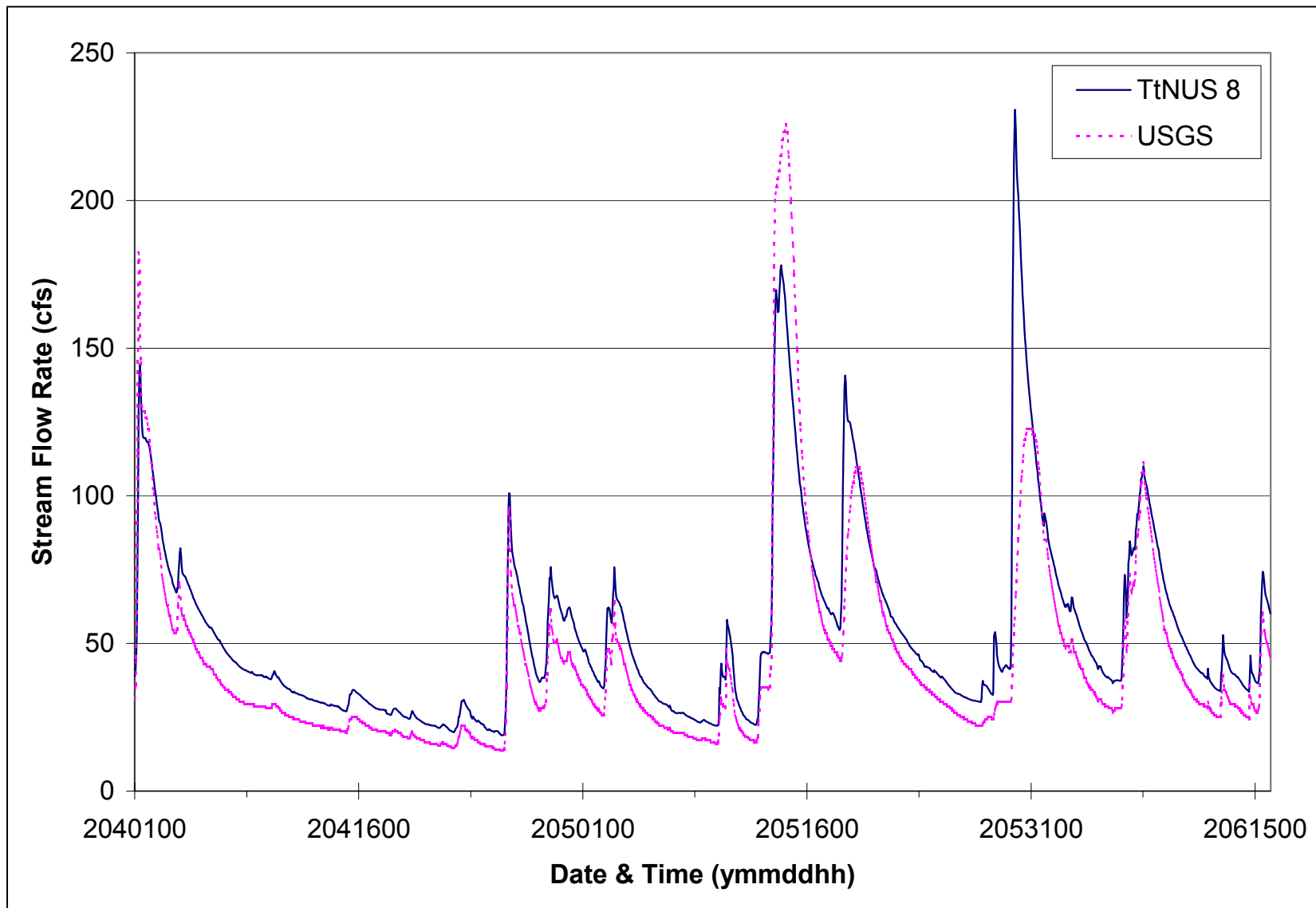


Figure 3-10: Hourly Streamflow at the USGS Station and at TtNUS Station 8 for the April 1, 2002 to June 15, 2002 Period of Record

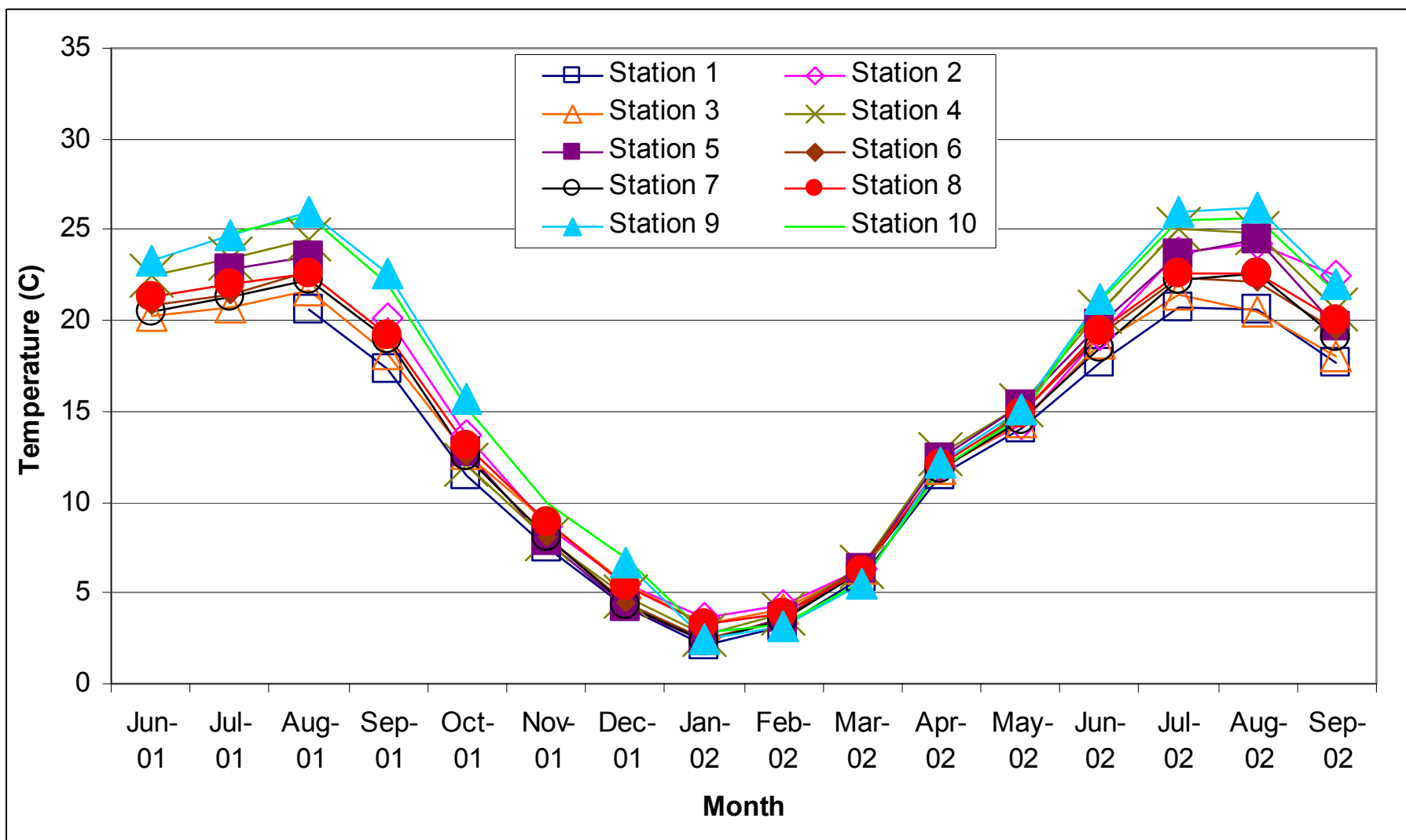


Figure 3-11: Average Monthly River Water Temperature Recorded at each of the TtNUS Stations Along the Aberjona River

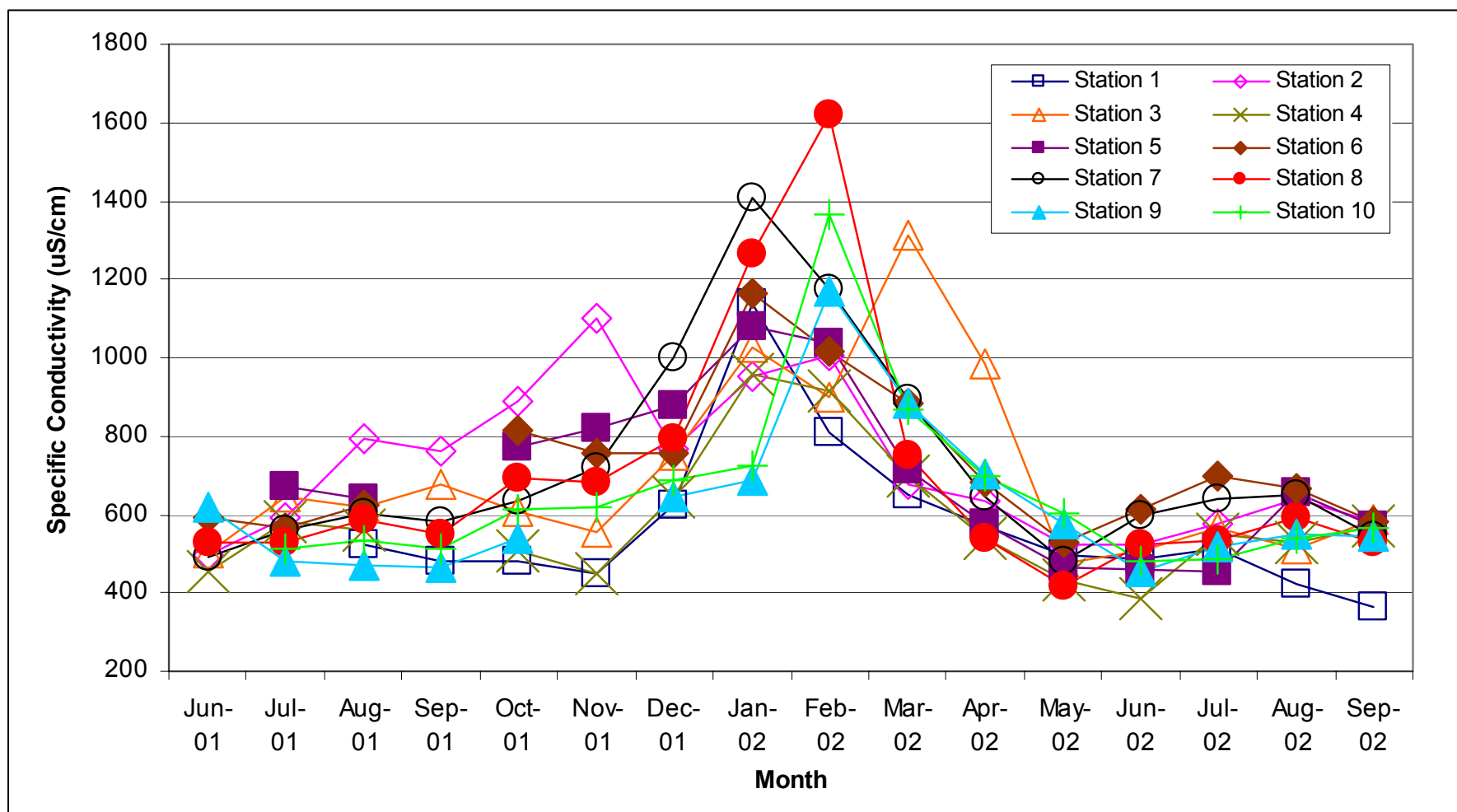


Figure 3-12: Monthly Average Specific Conductivity at Each TtNUS Station

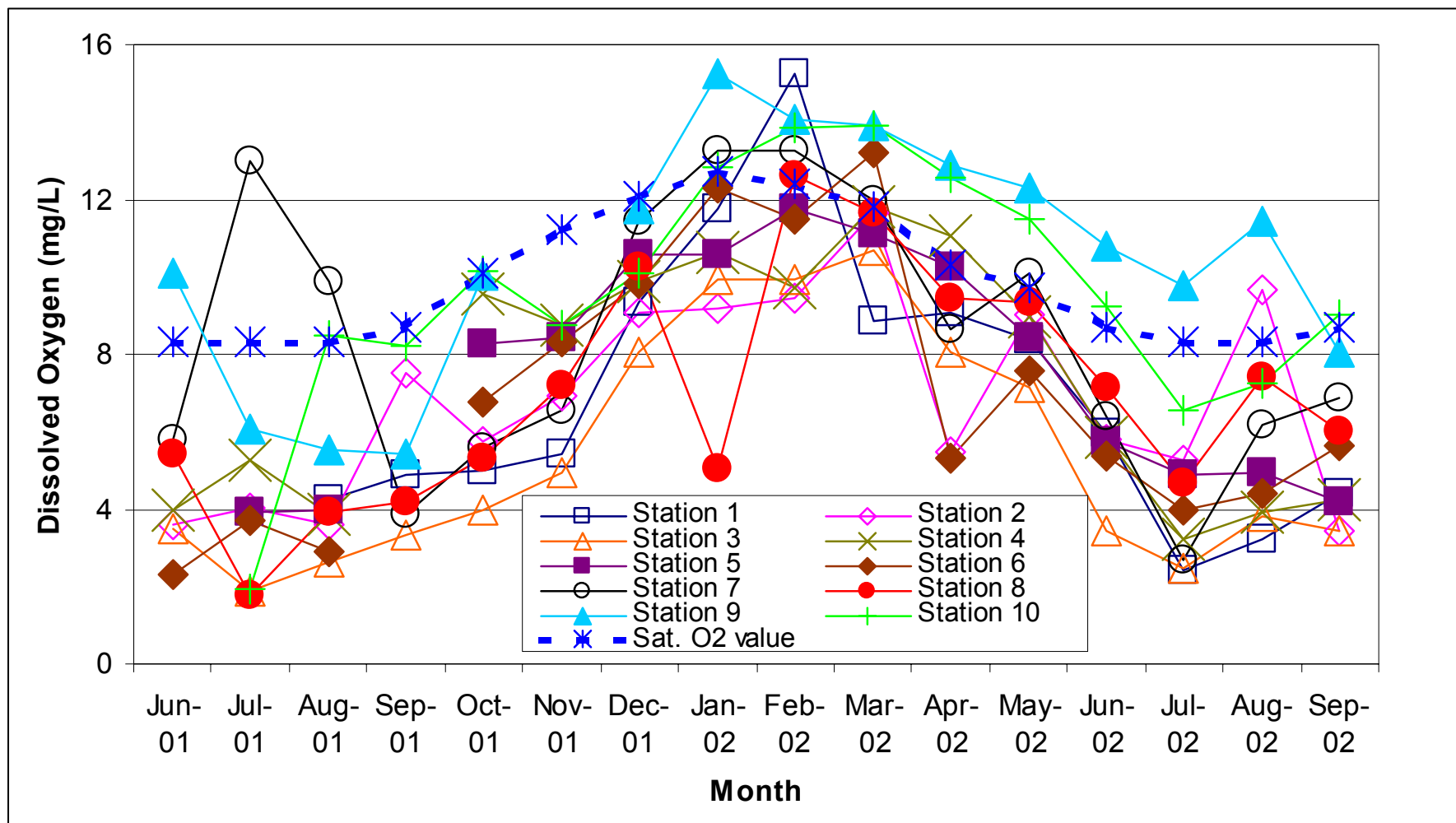


Figure 3-13: Monthly Average Dissolved Oxygen Concentration for the Aberjona River at each TtNUS Monitoring Station

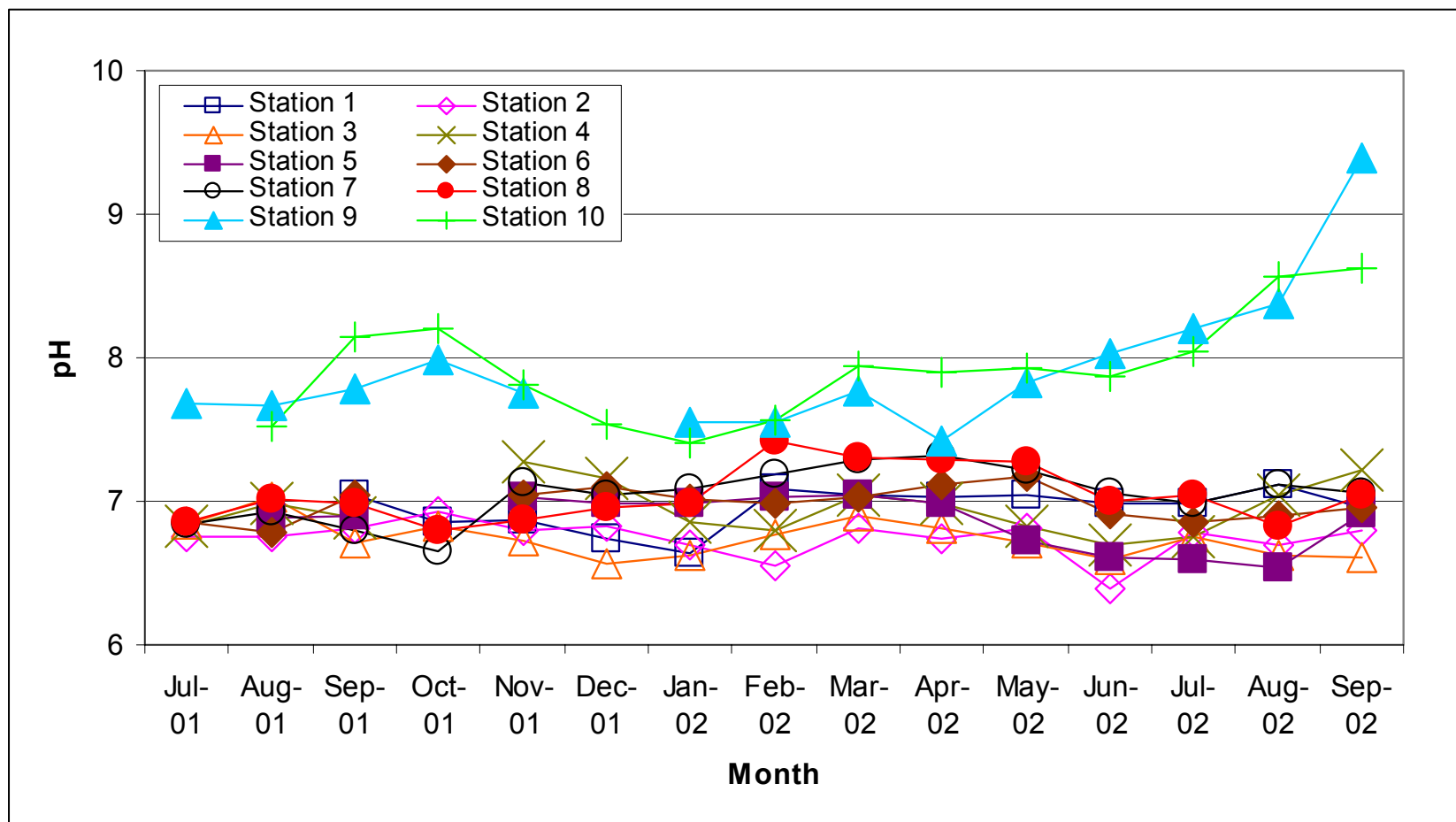


Figure 3-14: Average Monthly pH of the Aberjona River at each TtNUS Monitoring Station

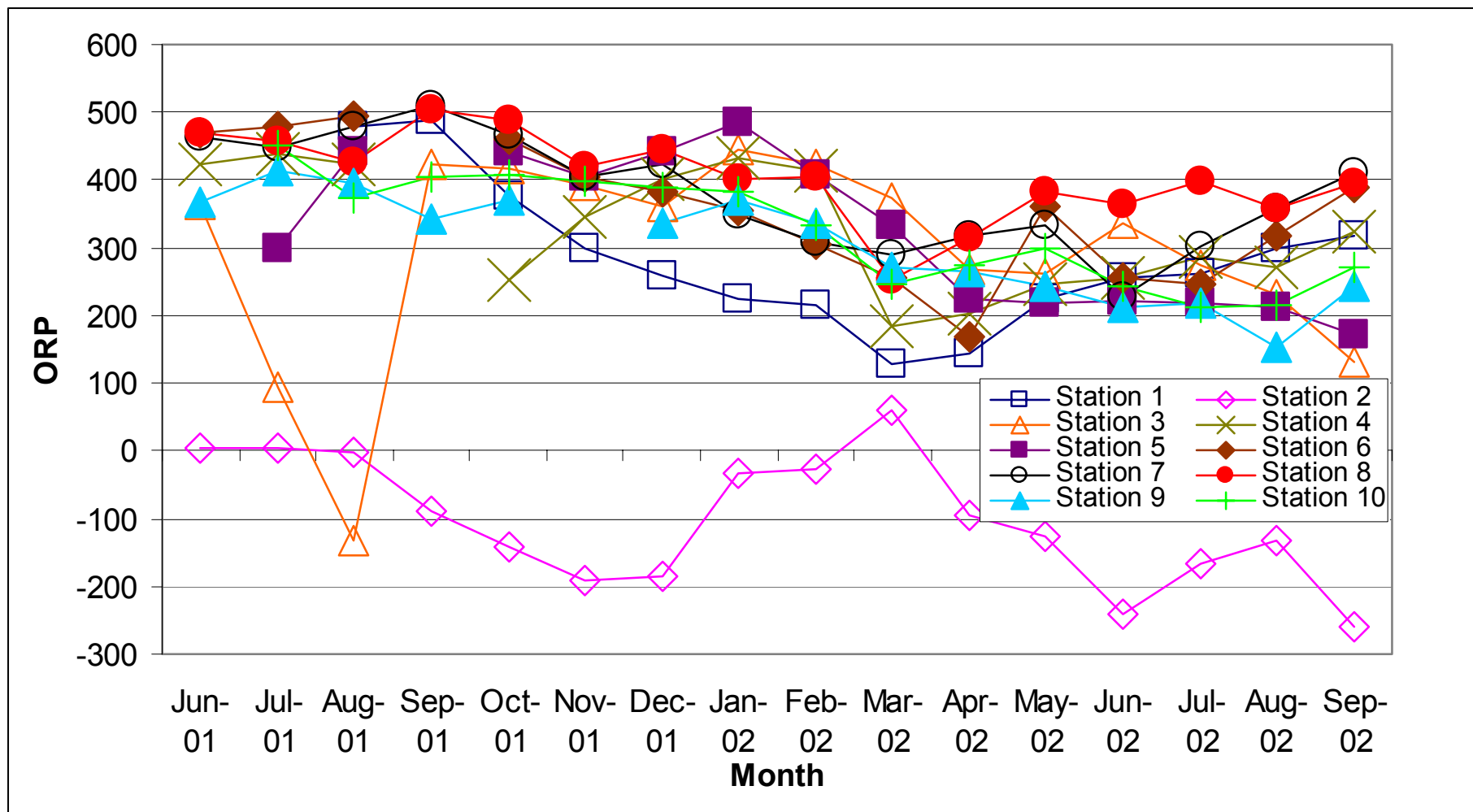


Figure 3-15: Monthly Average ORP for Each TtNUS Monitoring Station Along the Aberjona River

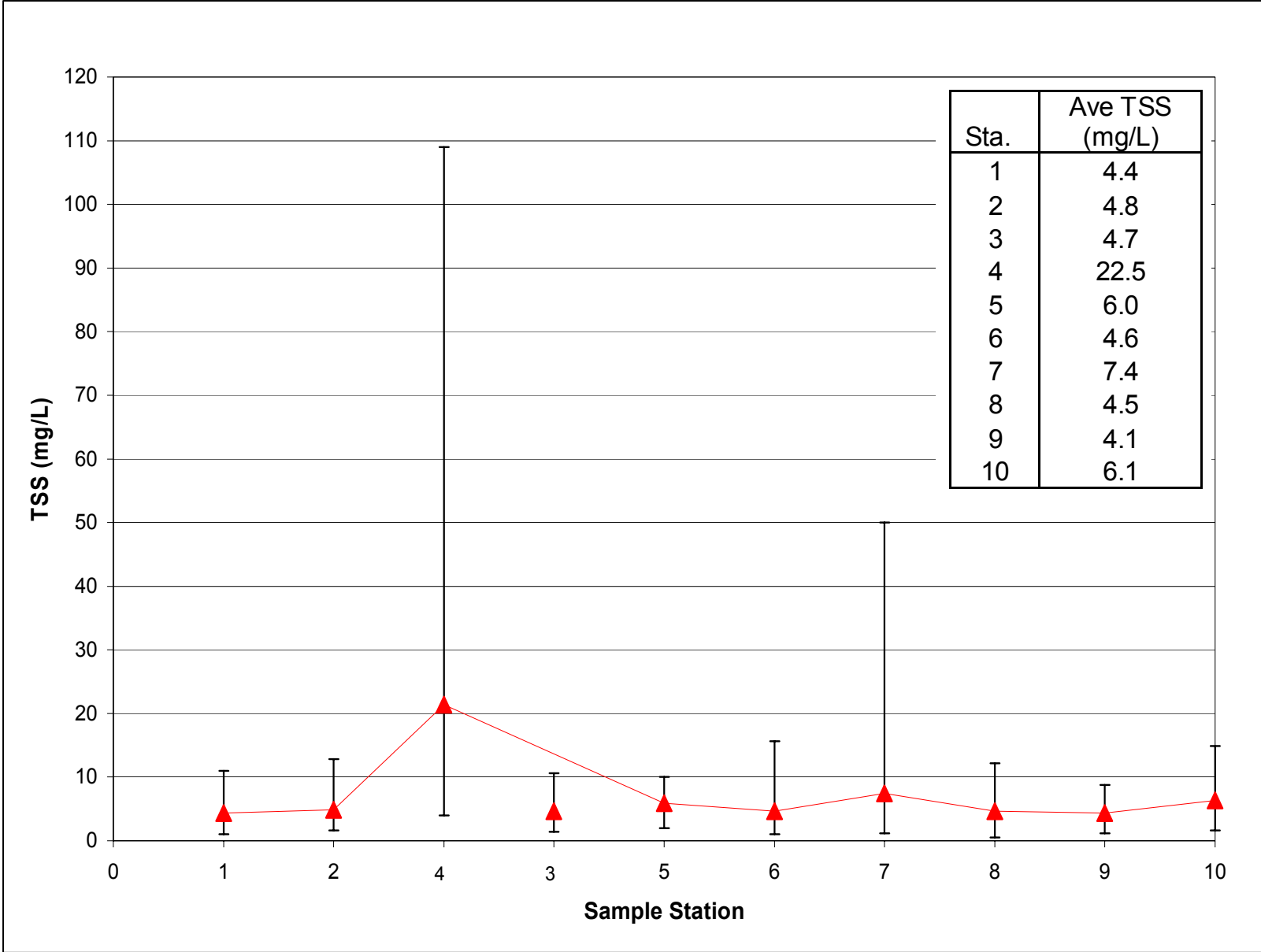


Figure 3-16: Overall Average TSS per Sample Station During Baseflow Conditions

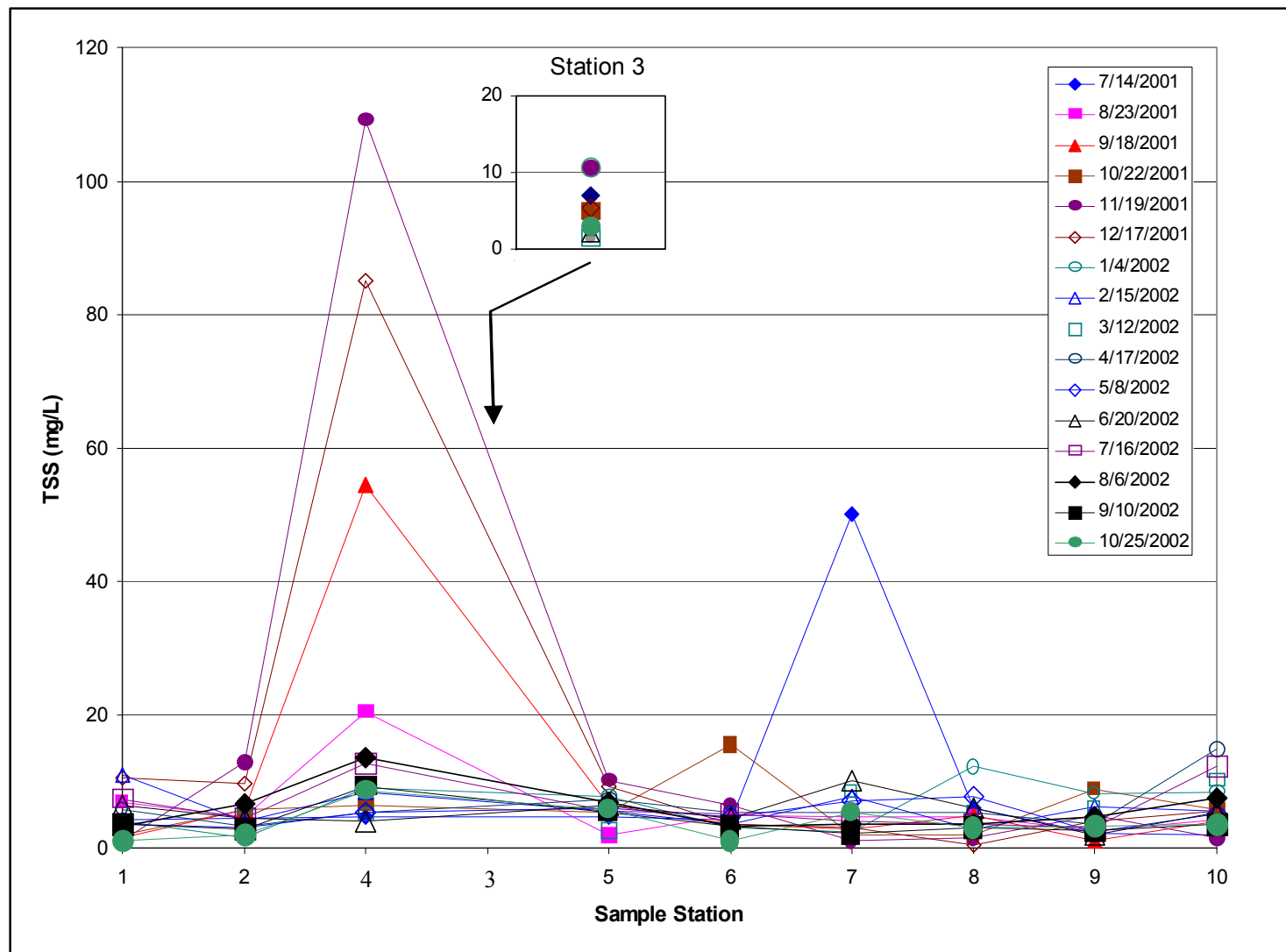


Figure 3-17: TSS per Sample Station During Baseflow Conditions

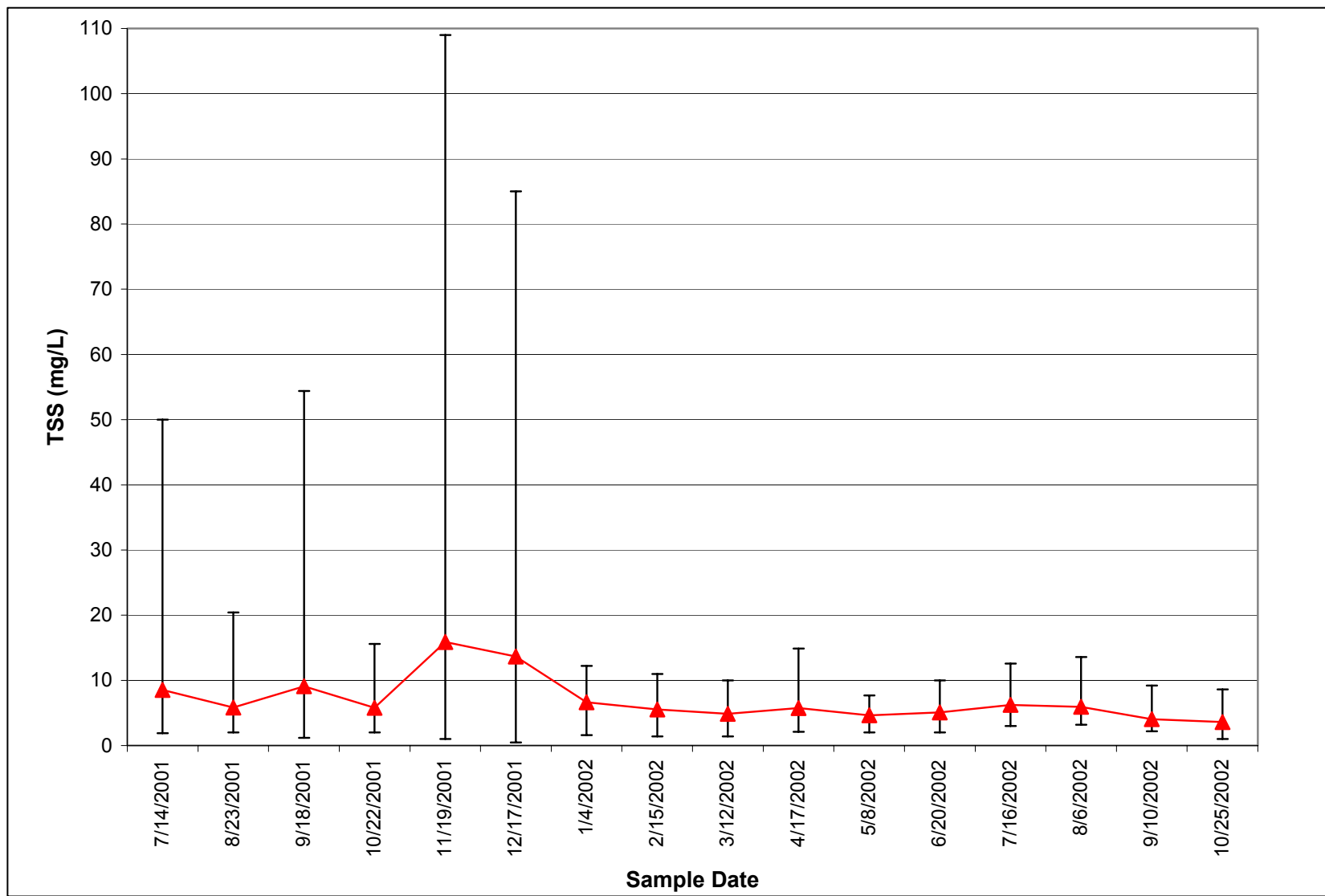


Figure 3-18: Overall Average TSS per Sampling Date During Baseflow Conditions

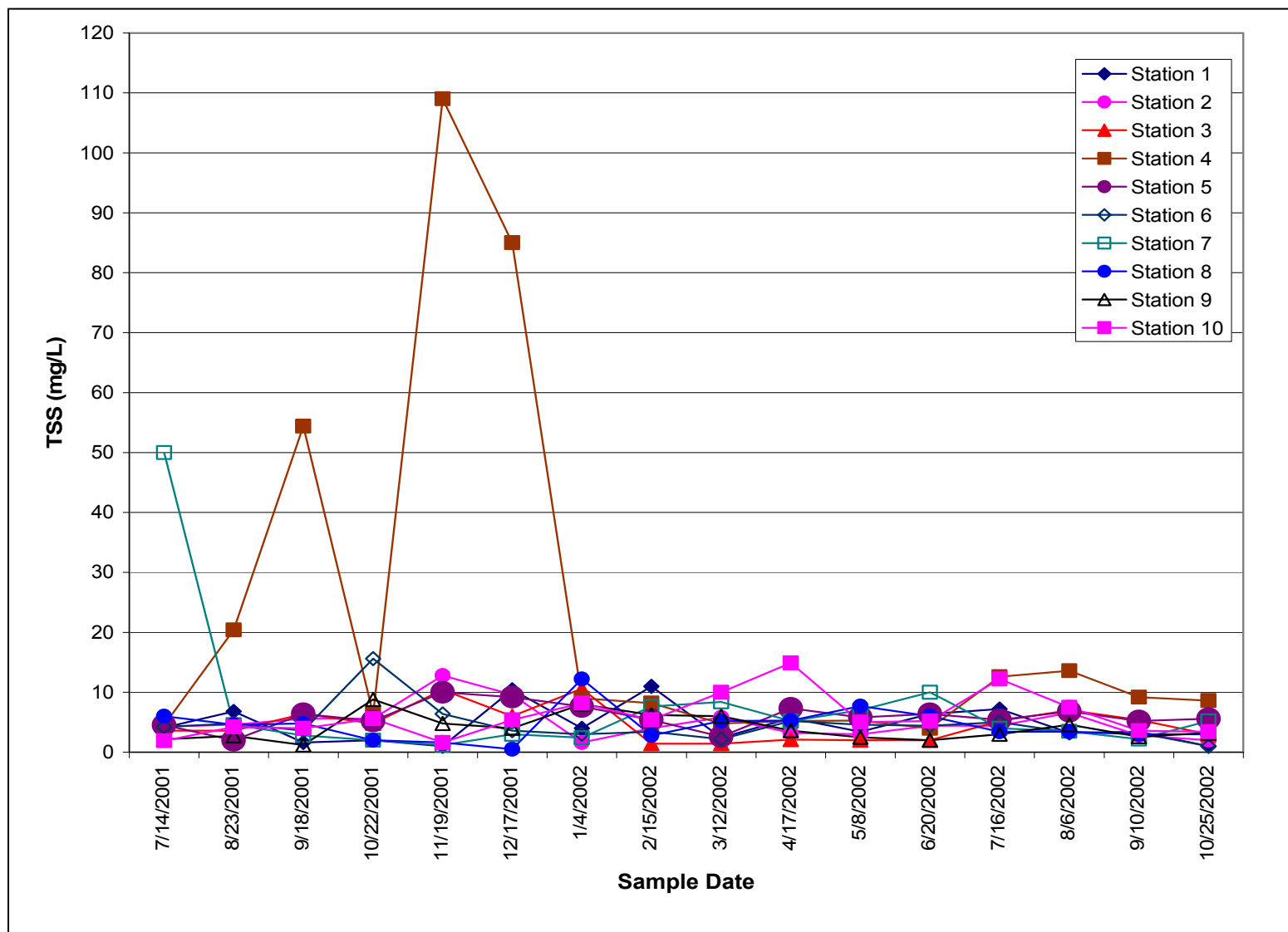
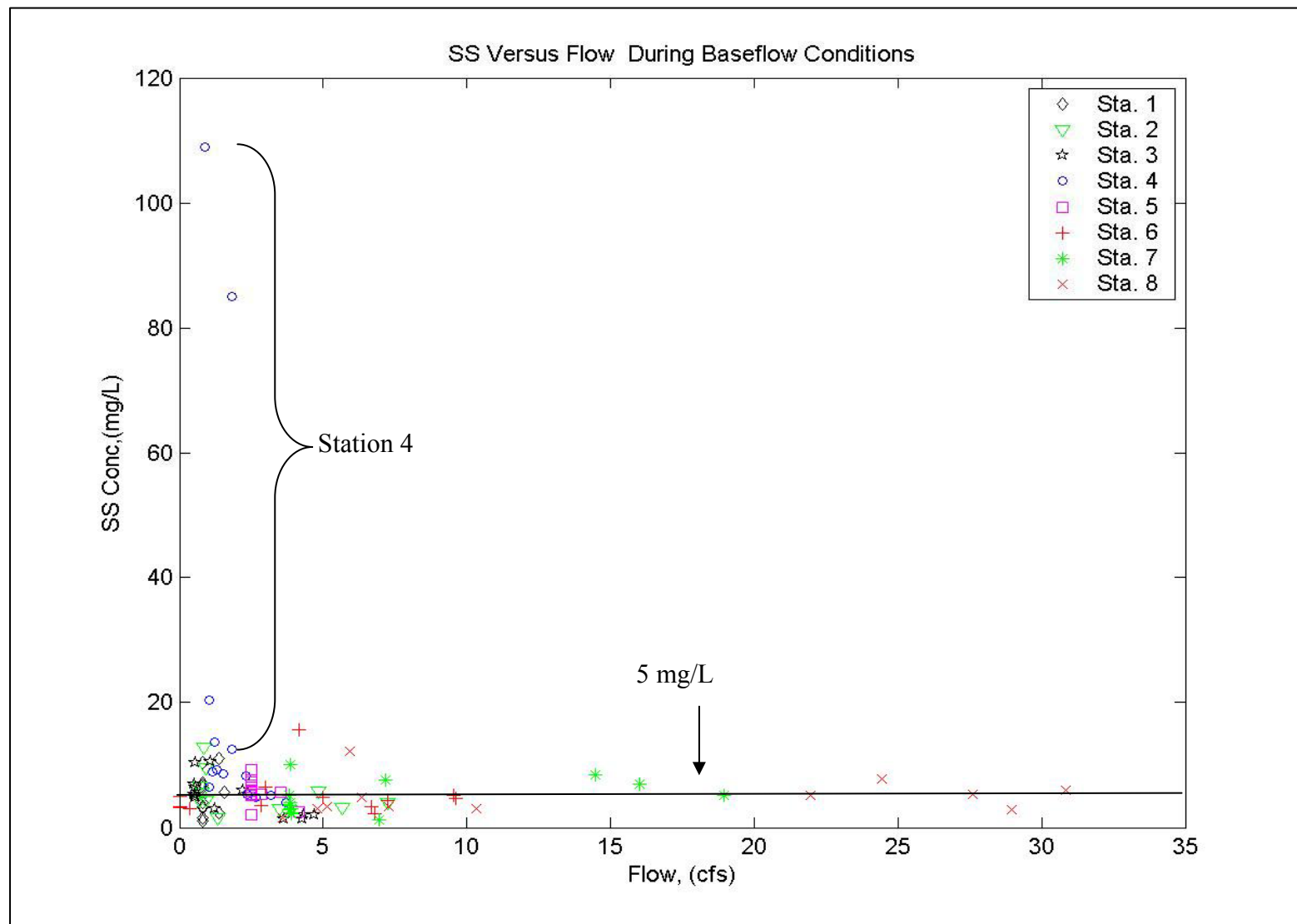


Figure 3-19: TSS per Sampling Date During Baseflow Conditions



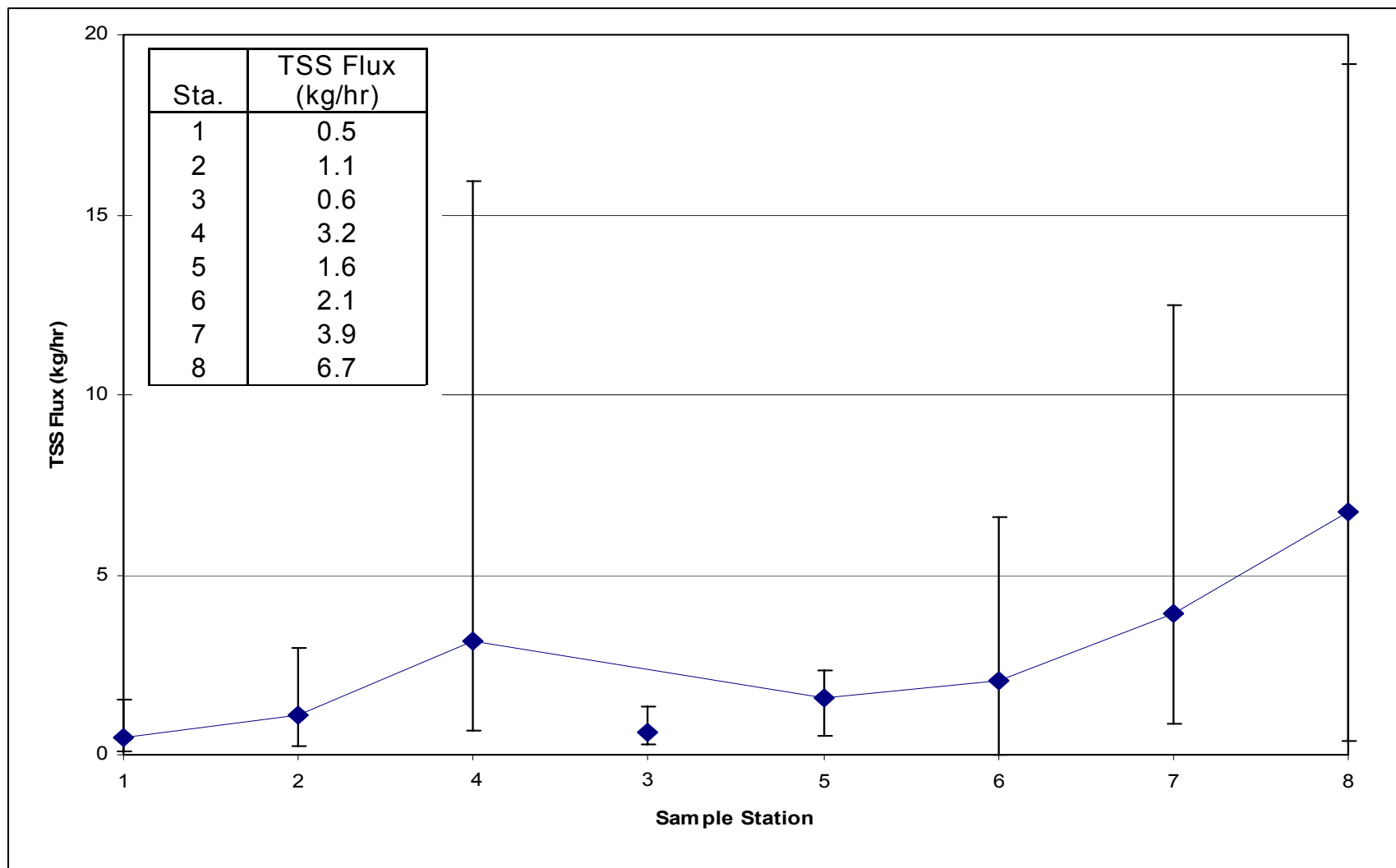


Figure 3-21: Average TSS Flux per Sample Station During Baseflow Conditions

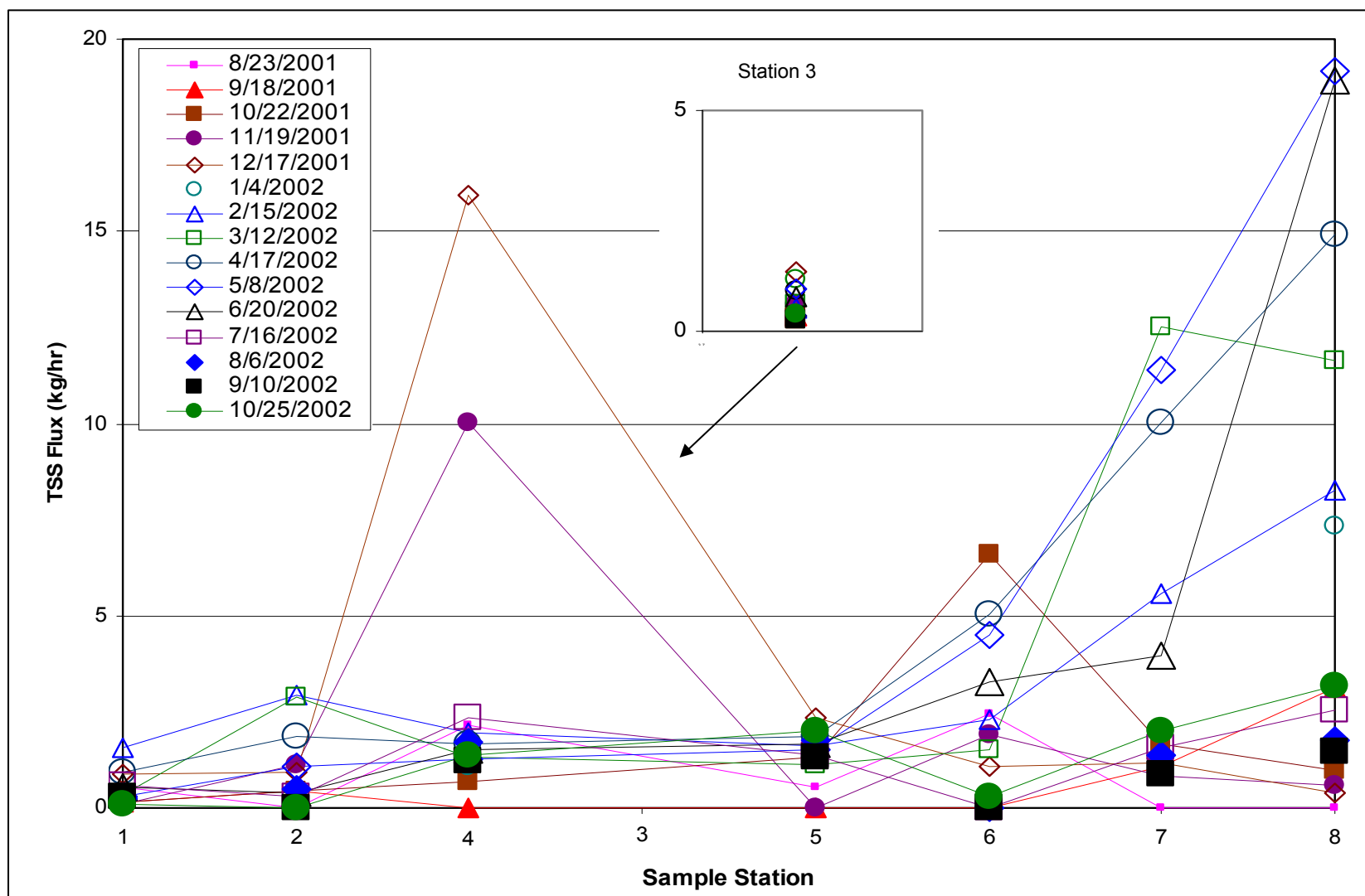


Figure 3-22: TSS Flux at each Sample Station for each Baseflow Event

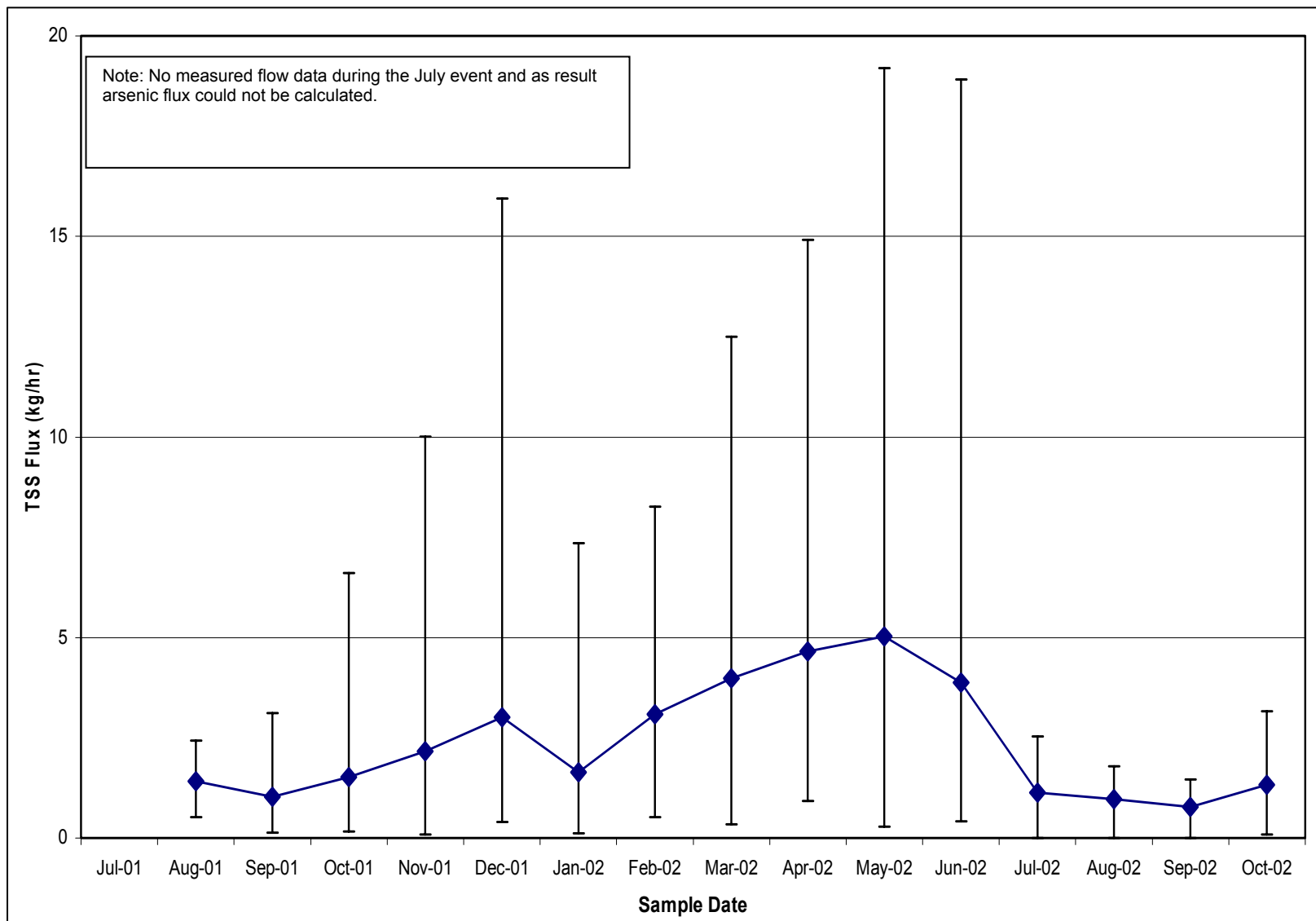


Figure 3-23: Average TSS Flux per Sample Date During Baseflow Conditions

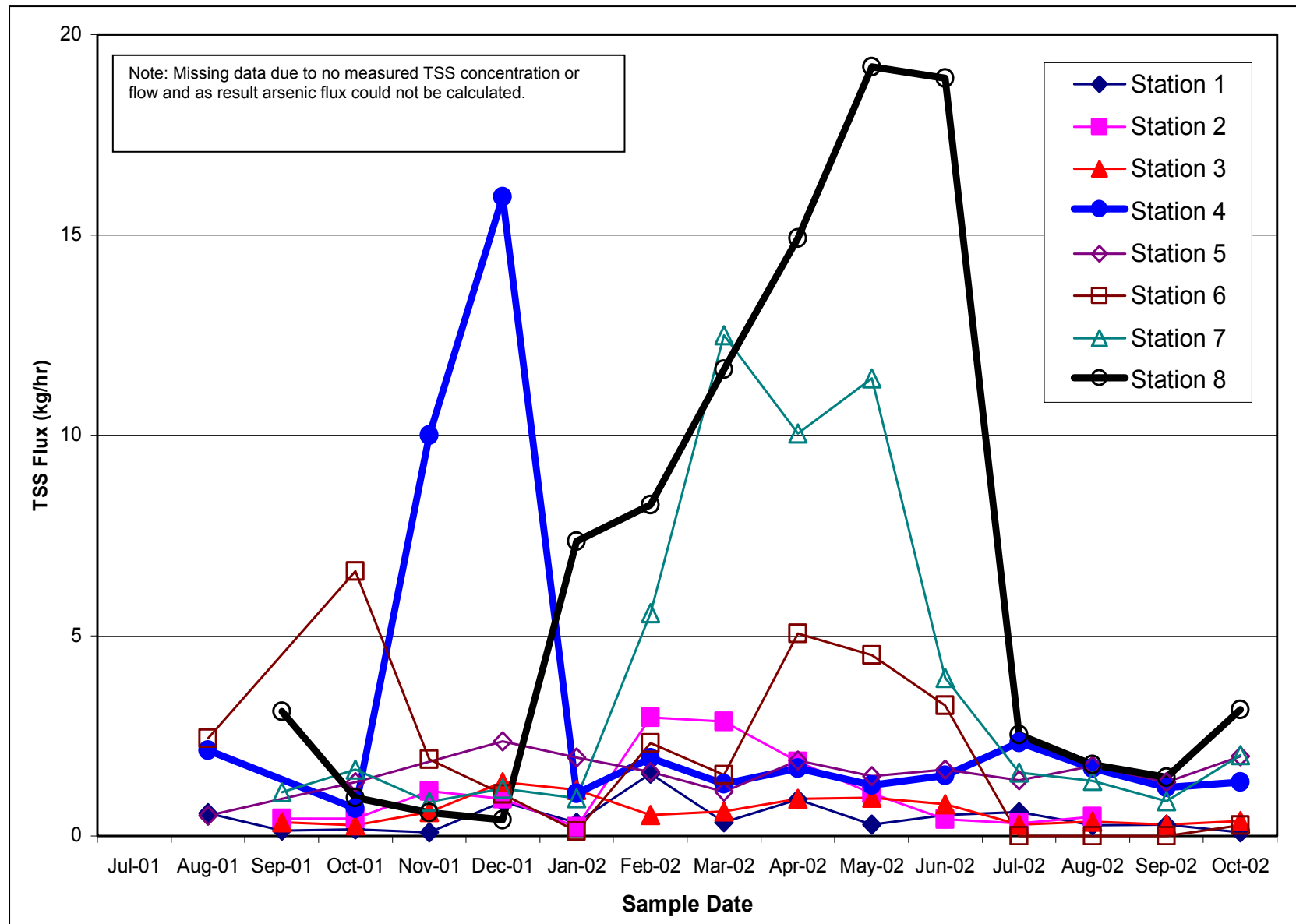


Figure 3-24: TSS Flux per Sample Date and Station During Baseflow Conditions

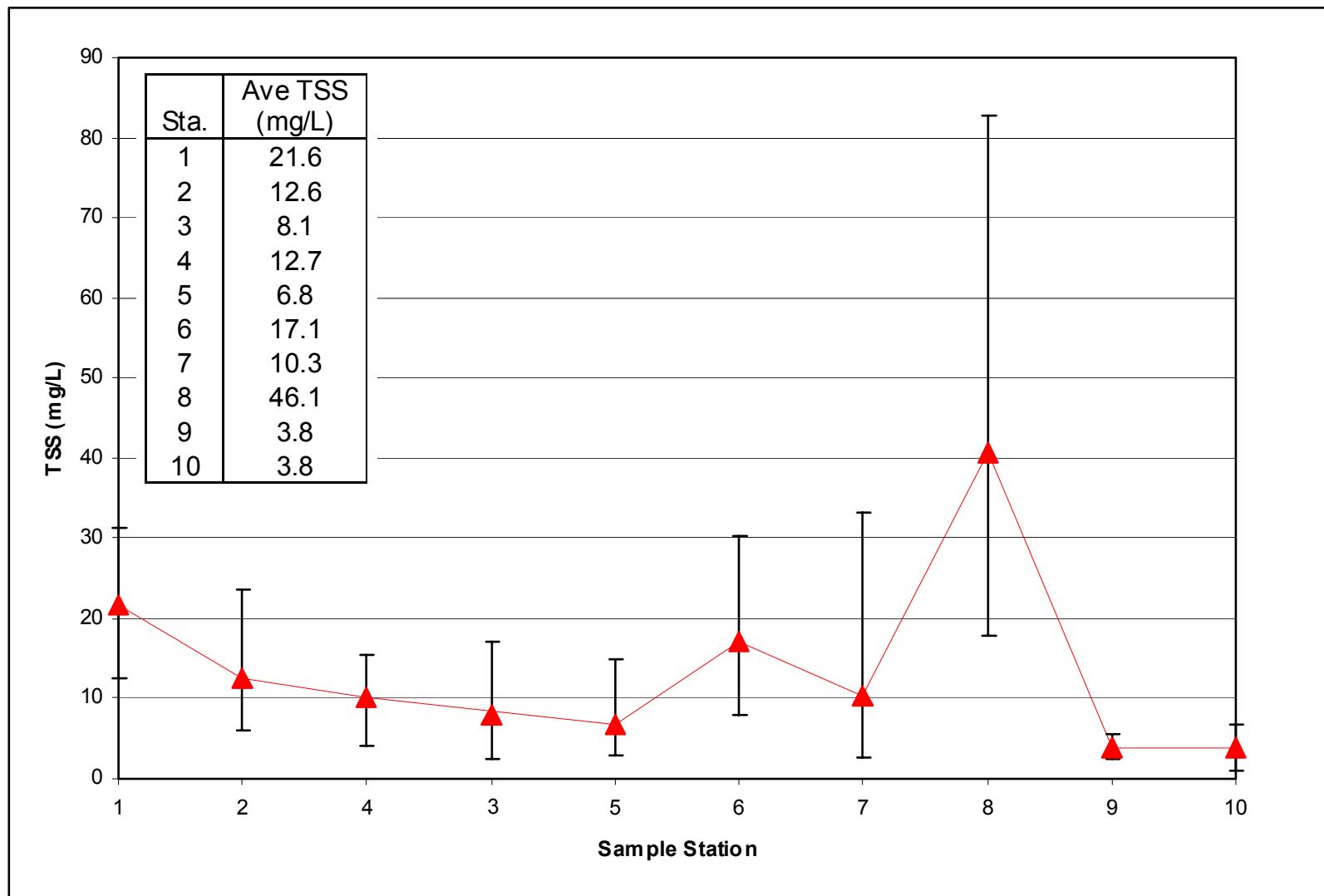


Figure 3-25: Overall Average TSS Concentrations per Sample Station During Storm Flow Conditions

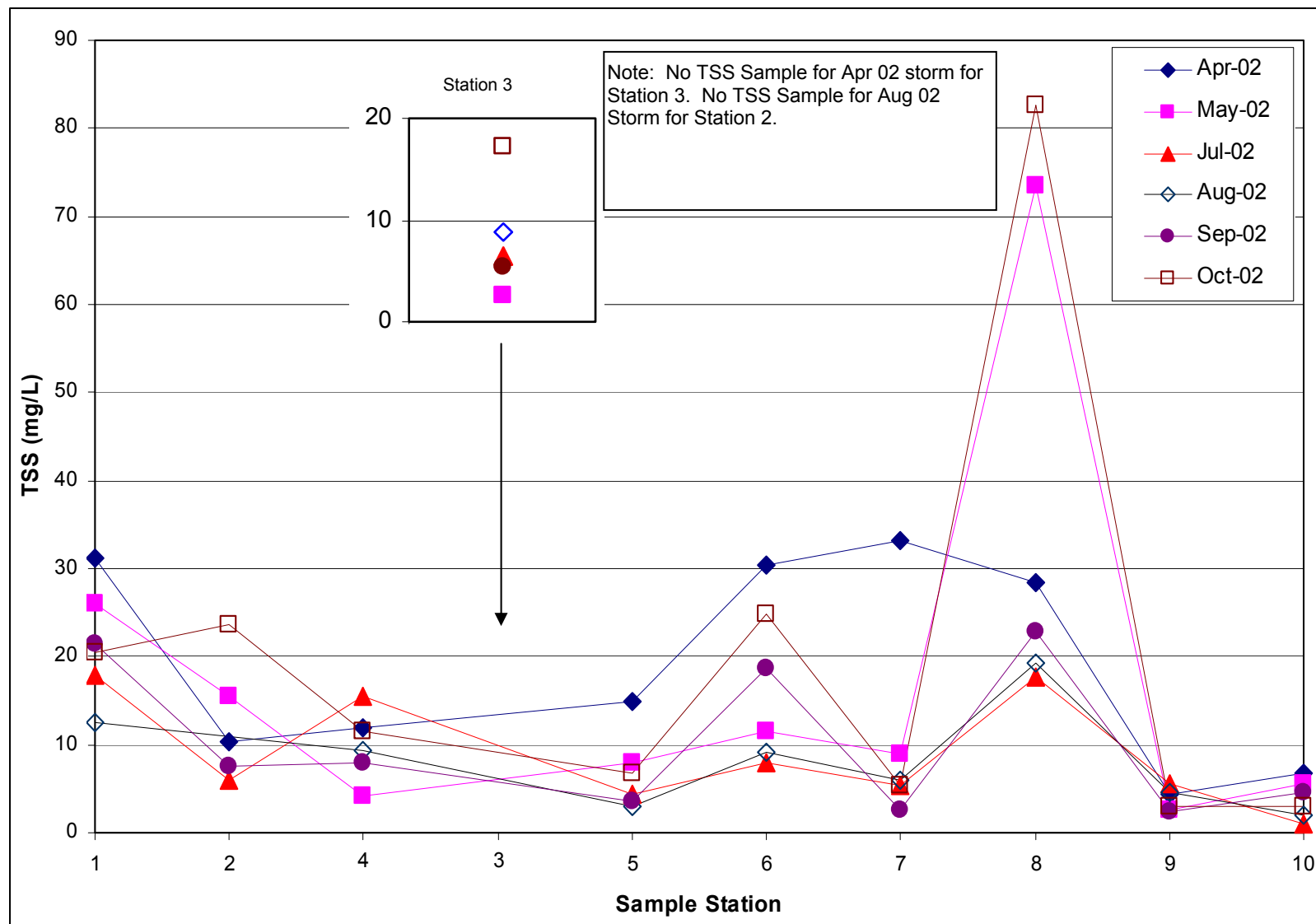


Figure 3-26: TSS Concentrations per Sample Station During Storm Flow Conditions



Figure 3-27: Overall Average TSS Concentrations per Sampling Date During Storm Flow Conditions

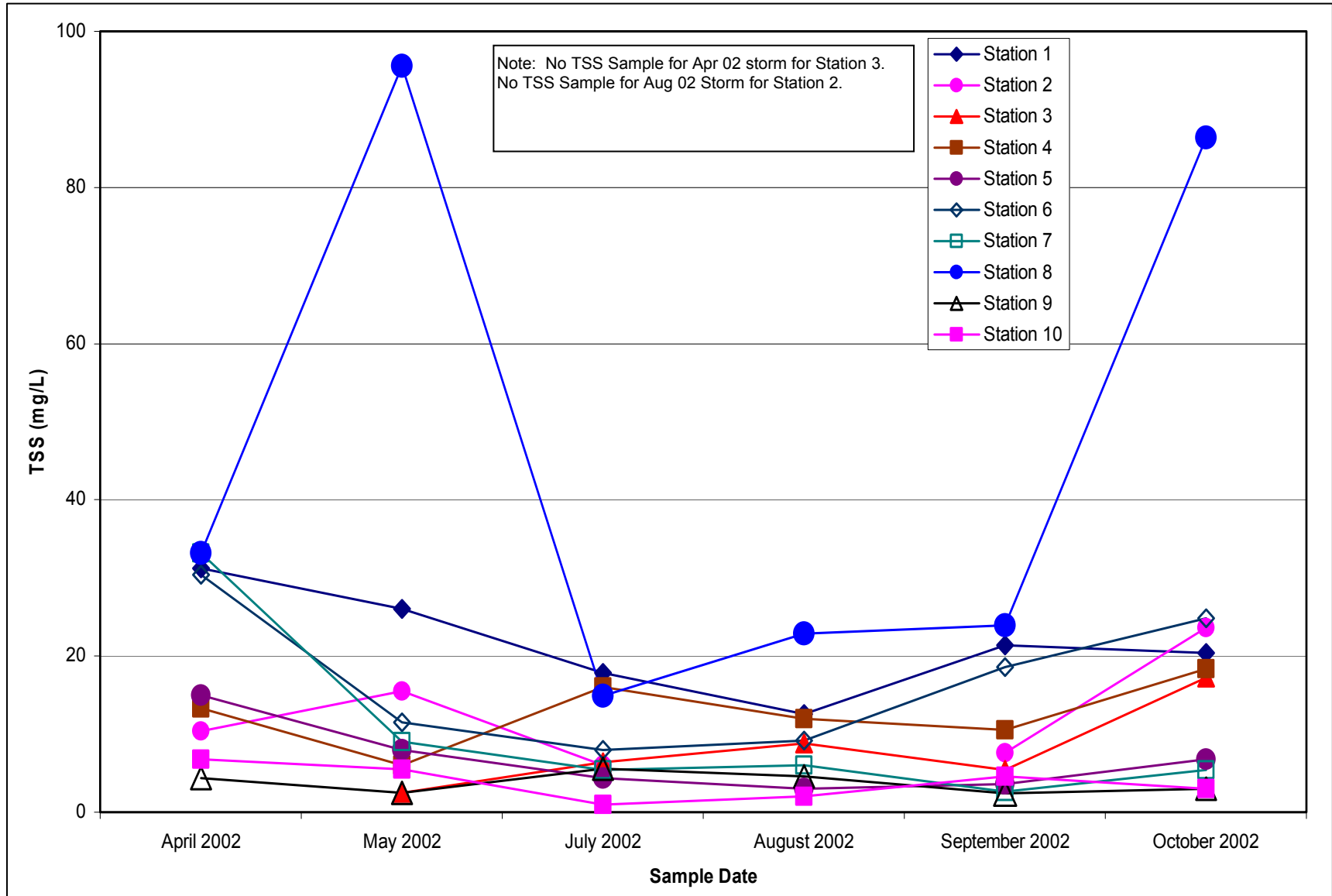


Figure 3-28: TSS Concentrations per Sampling Date During Storm Flow Conditions

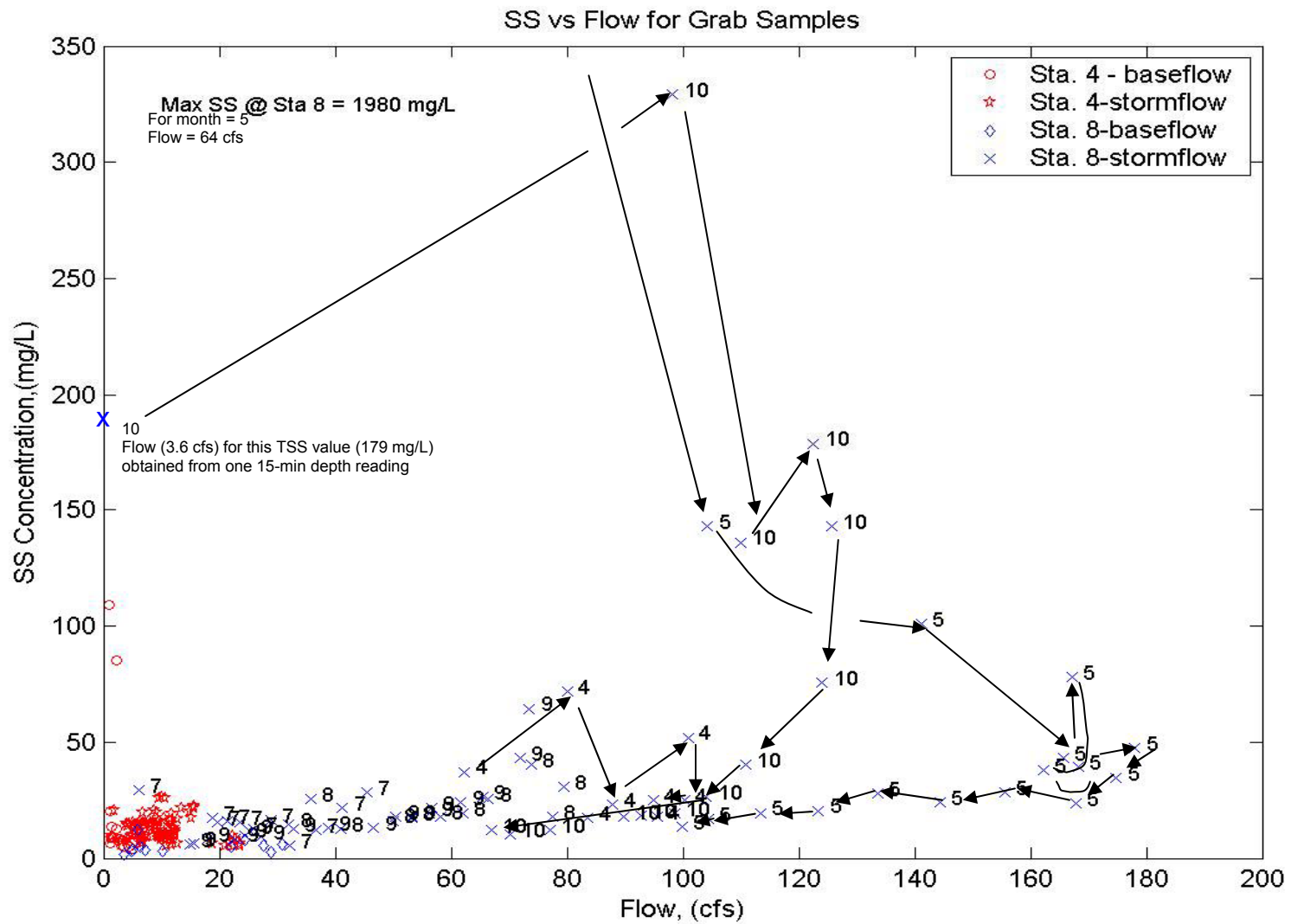


Figure 3-29: TSS Concentration Versus Flow At Stations 4 and 8. (All data correspond to grab samples. Number next to each symbol corresponds to the month the sample was collected. The arrows point in the direction of samples taken at a later time.)

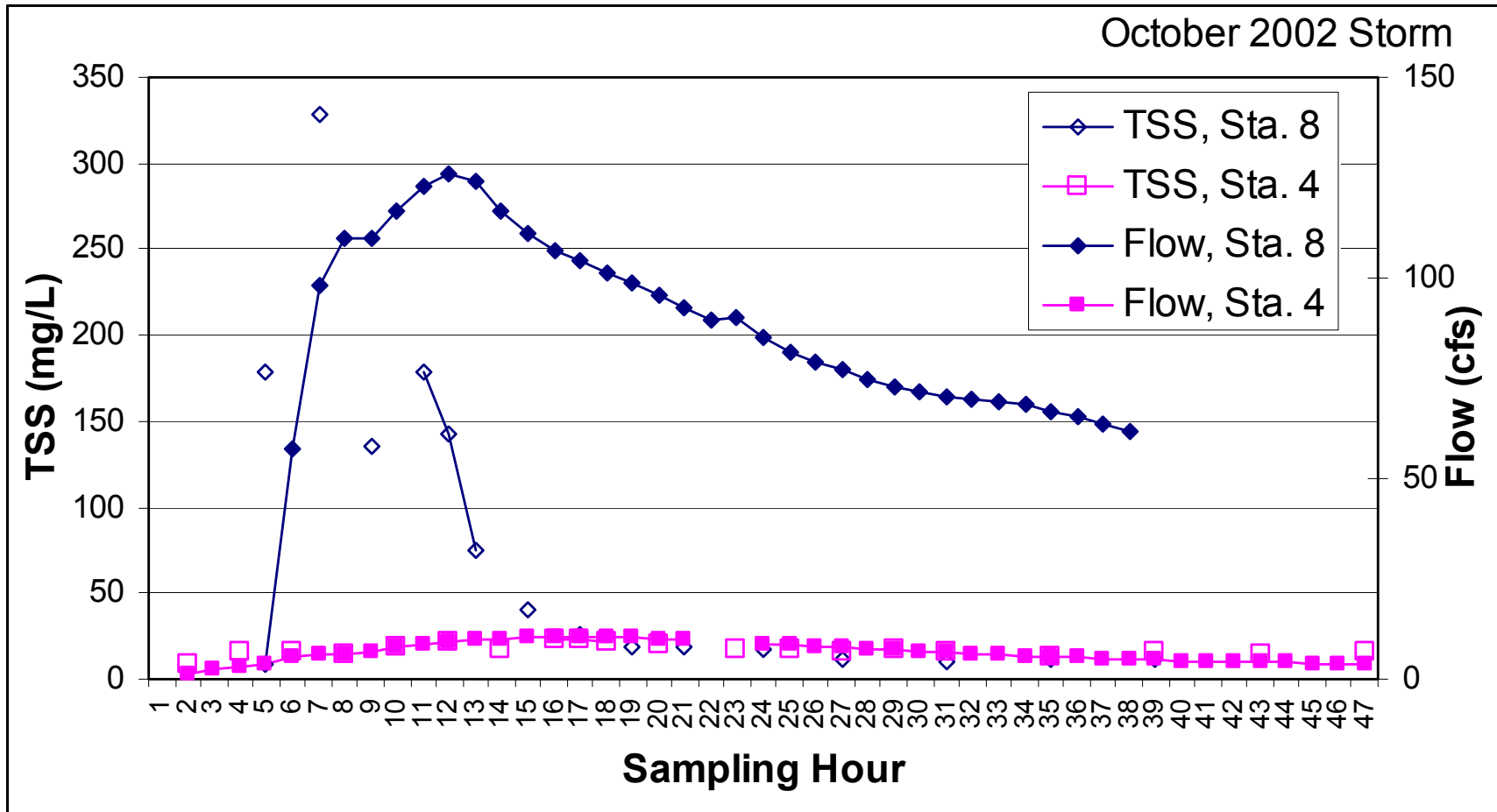


Figure 3-30: Time Series Plot of TSS and Flow at Stations 4 and 8 for the October 2002 Storm

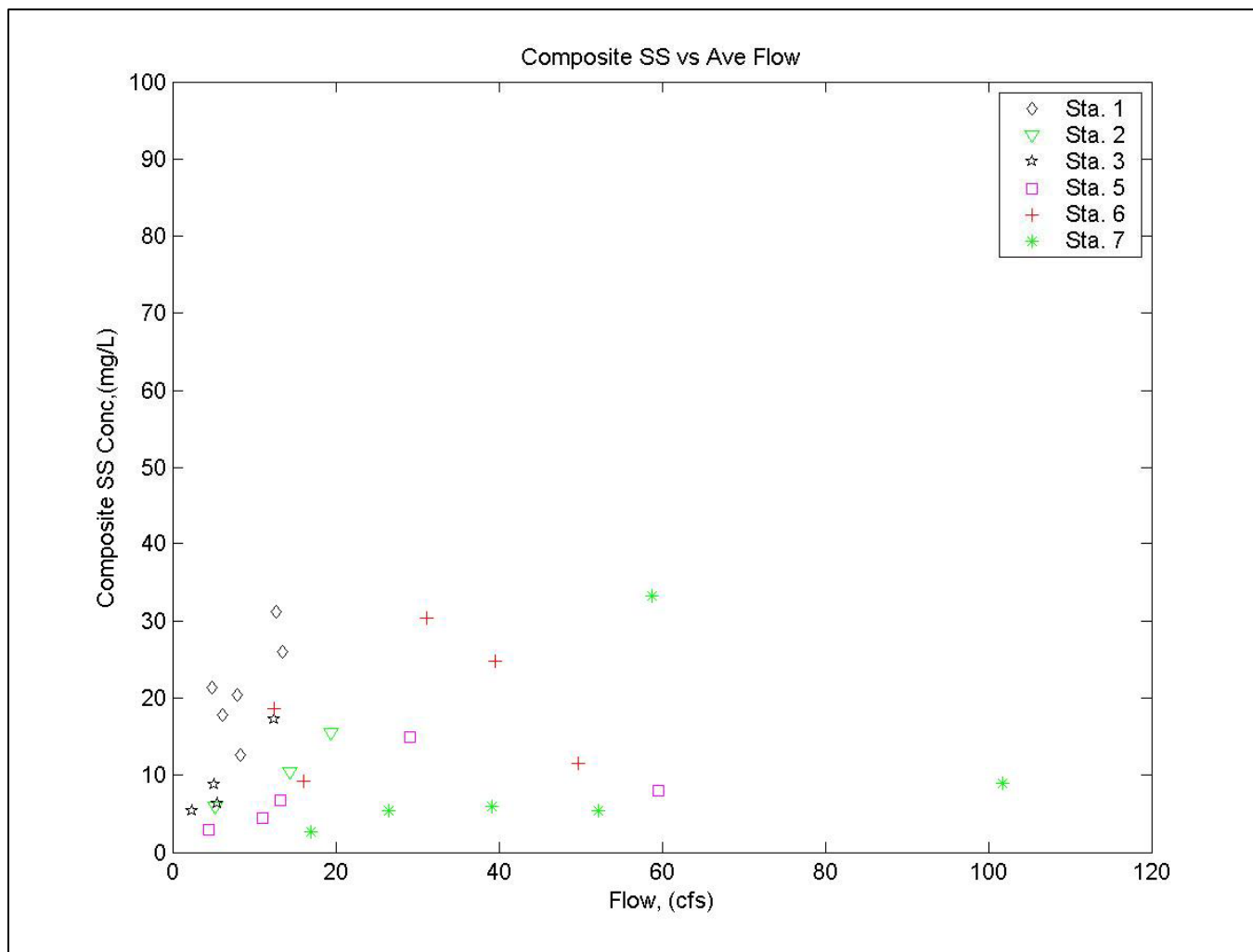


Figure 3-31: Storm Composite TSS Concentrations Versus Flow At Stations 1,2,3,5,6, and 7

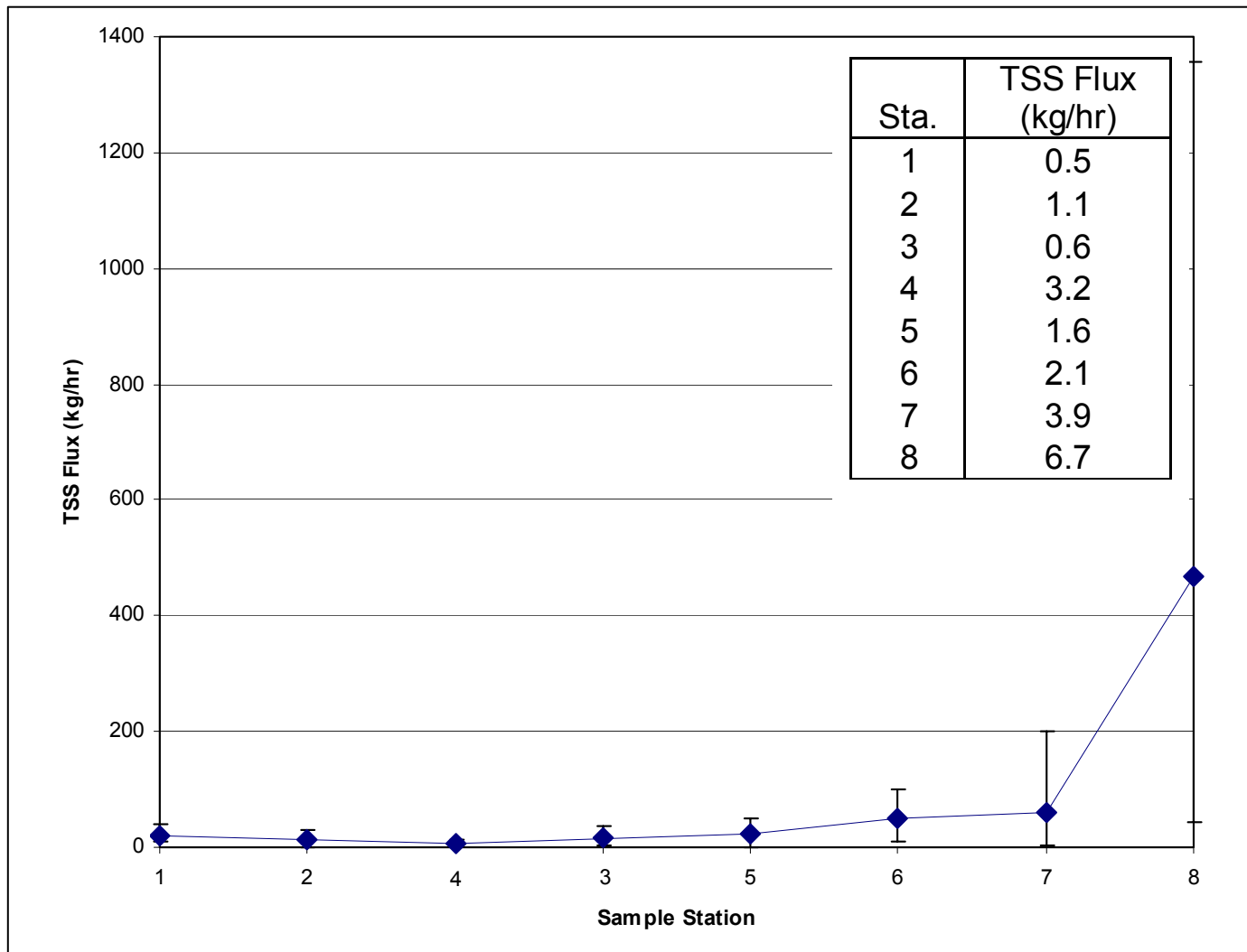


Figure 3-32: Average TSS Flux per Sample Station During Storm flow Conditions

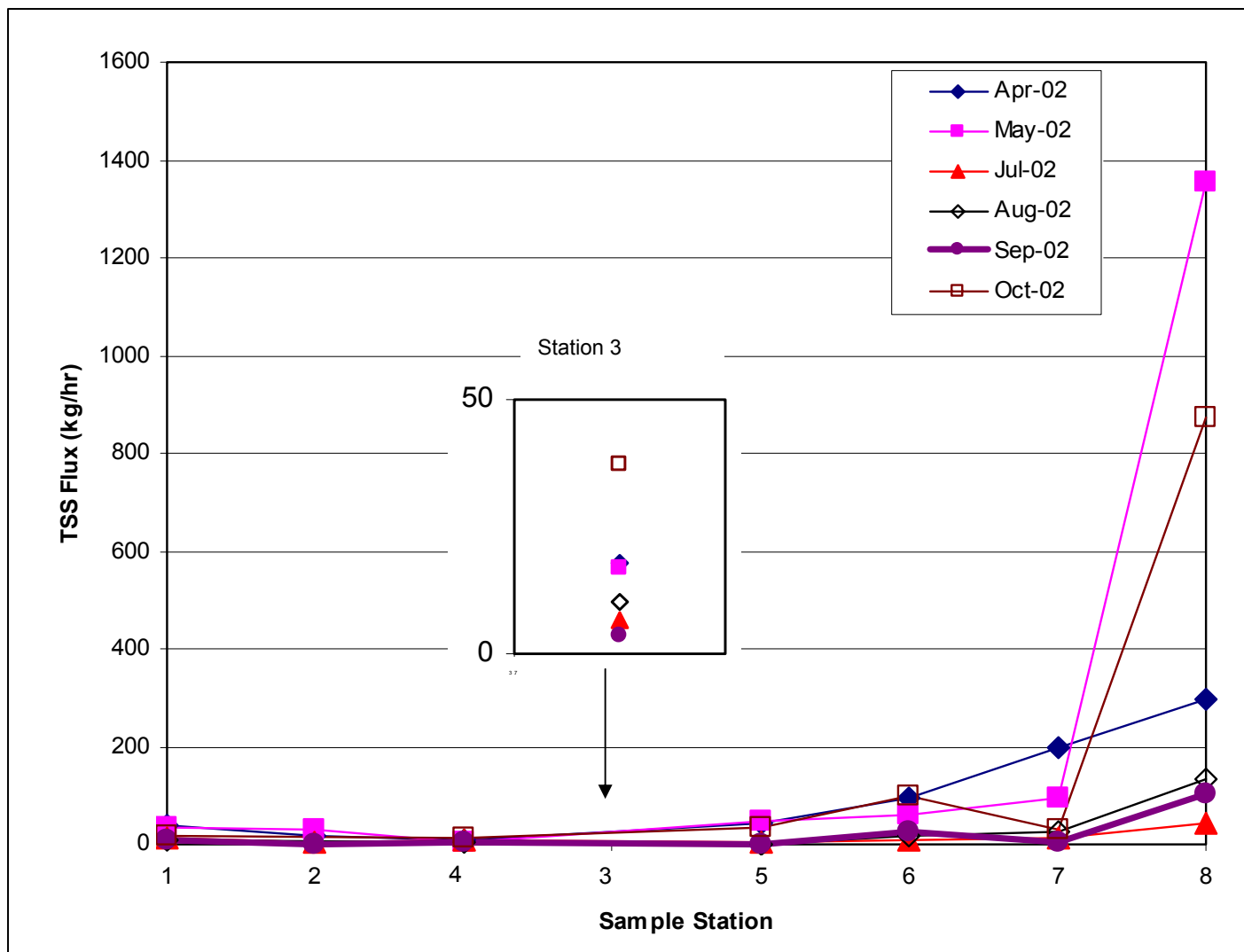


Figure 3-33: TSS Flux at each Sample Station for each Storm flow Event

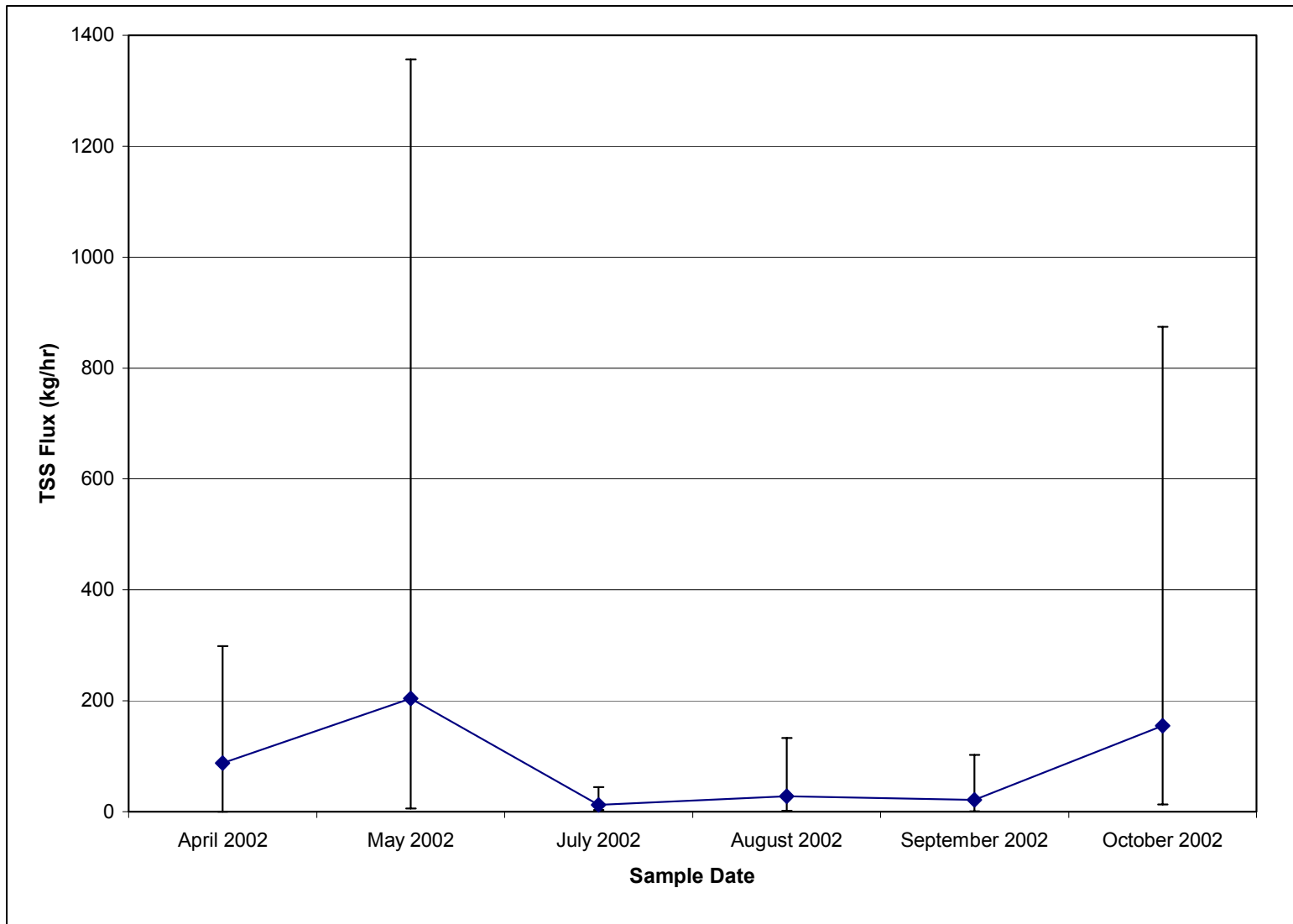


Figure 3-34: Average TSS Flux per Sample Date During Storm Flow Conditions

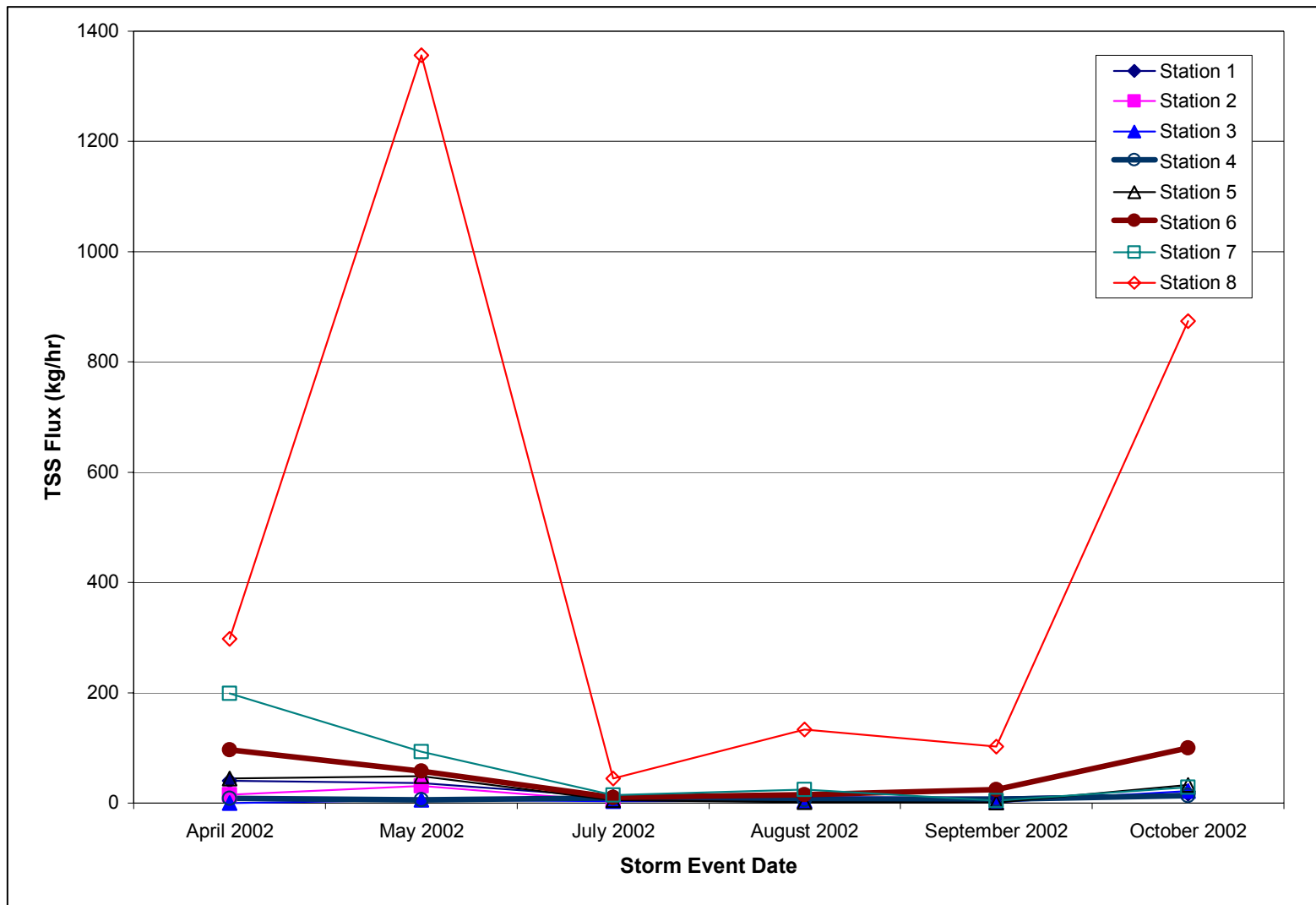


Figure 3-35: TSS Flux per Sample Date and Station During Storm flow Conditions

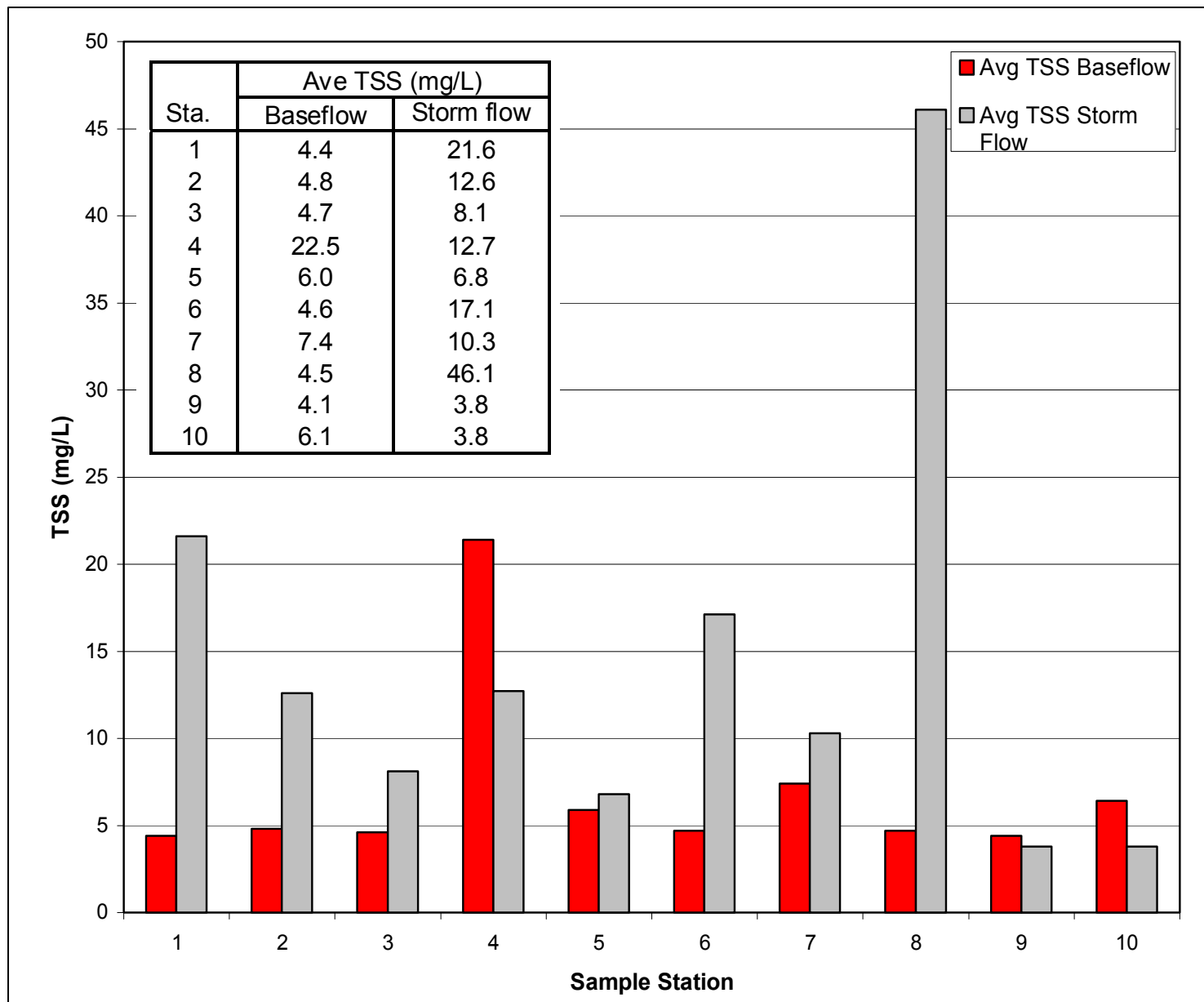


Figure 3-36: Average Baseflow Versus Average Storm Flow TSS Concentration

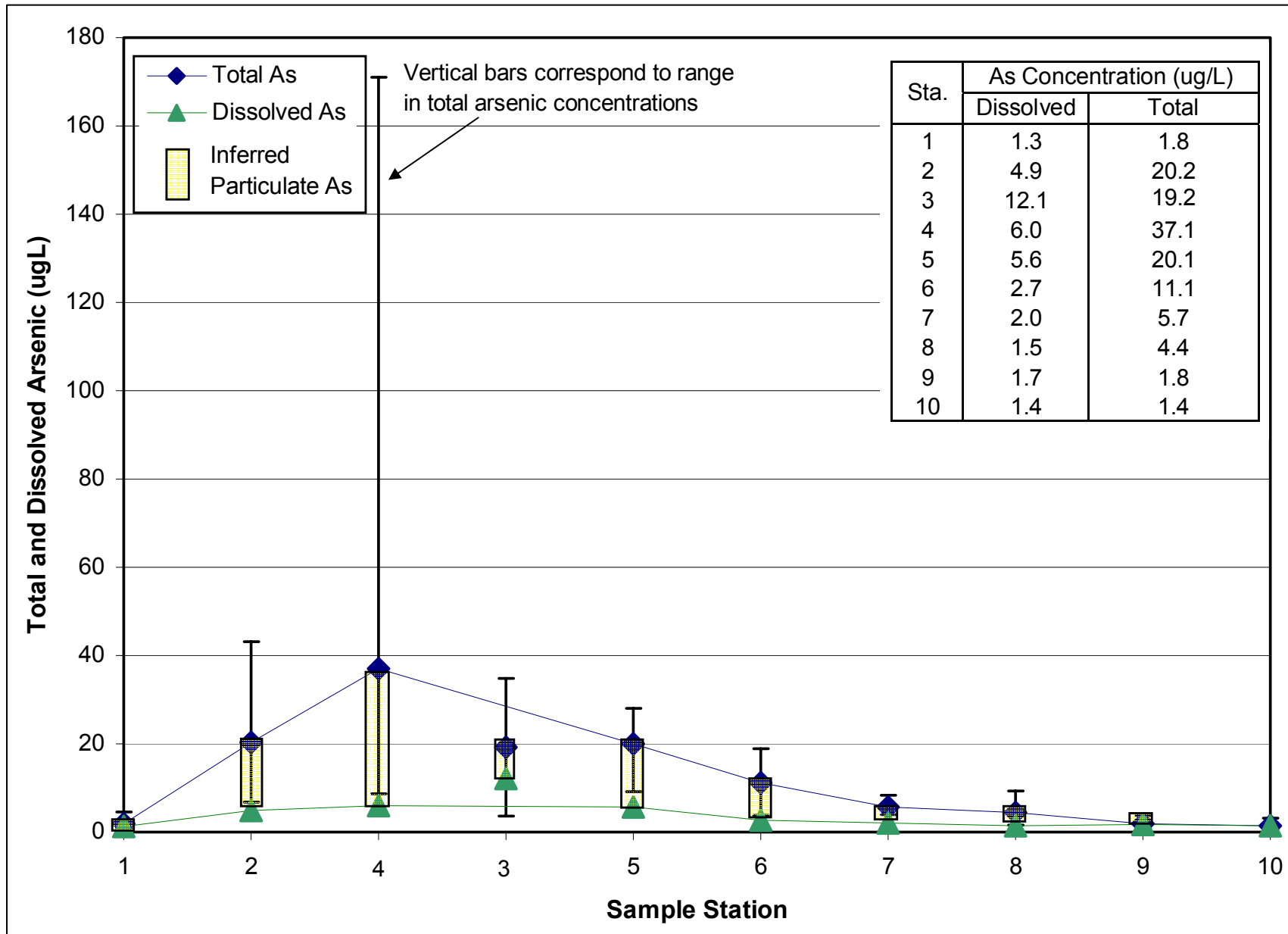


Figure 4-1: Average Total and Dissolved Arsenic Concentrations per Sample Station During Baseflow Conditions

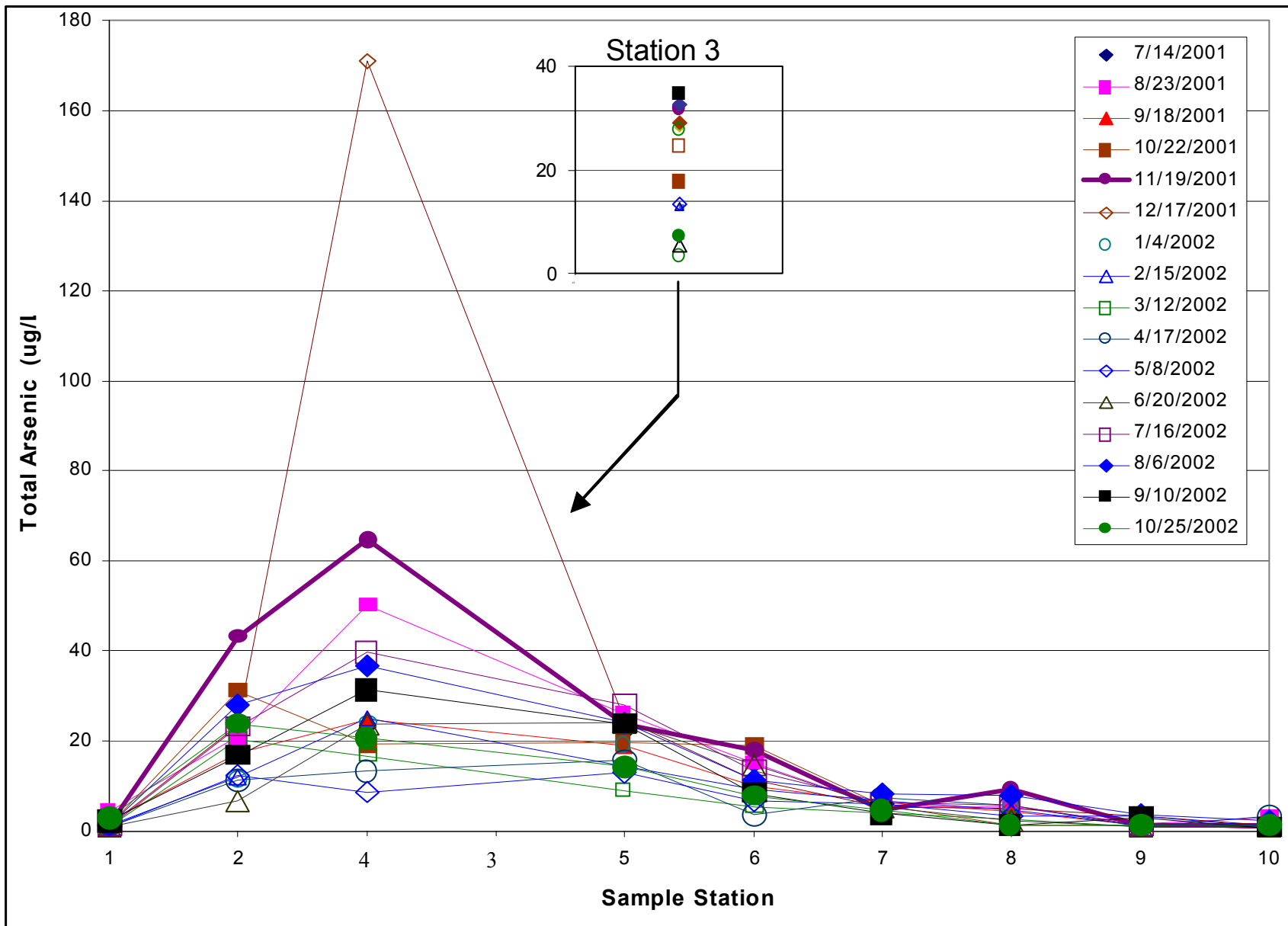


Figure 4-2: Total Arsenic Concentrations per Sample Station During each Baseflow Sampling Date

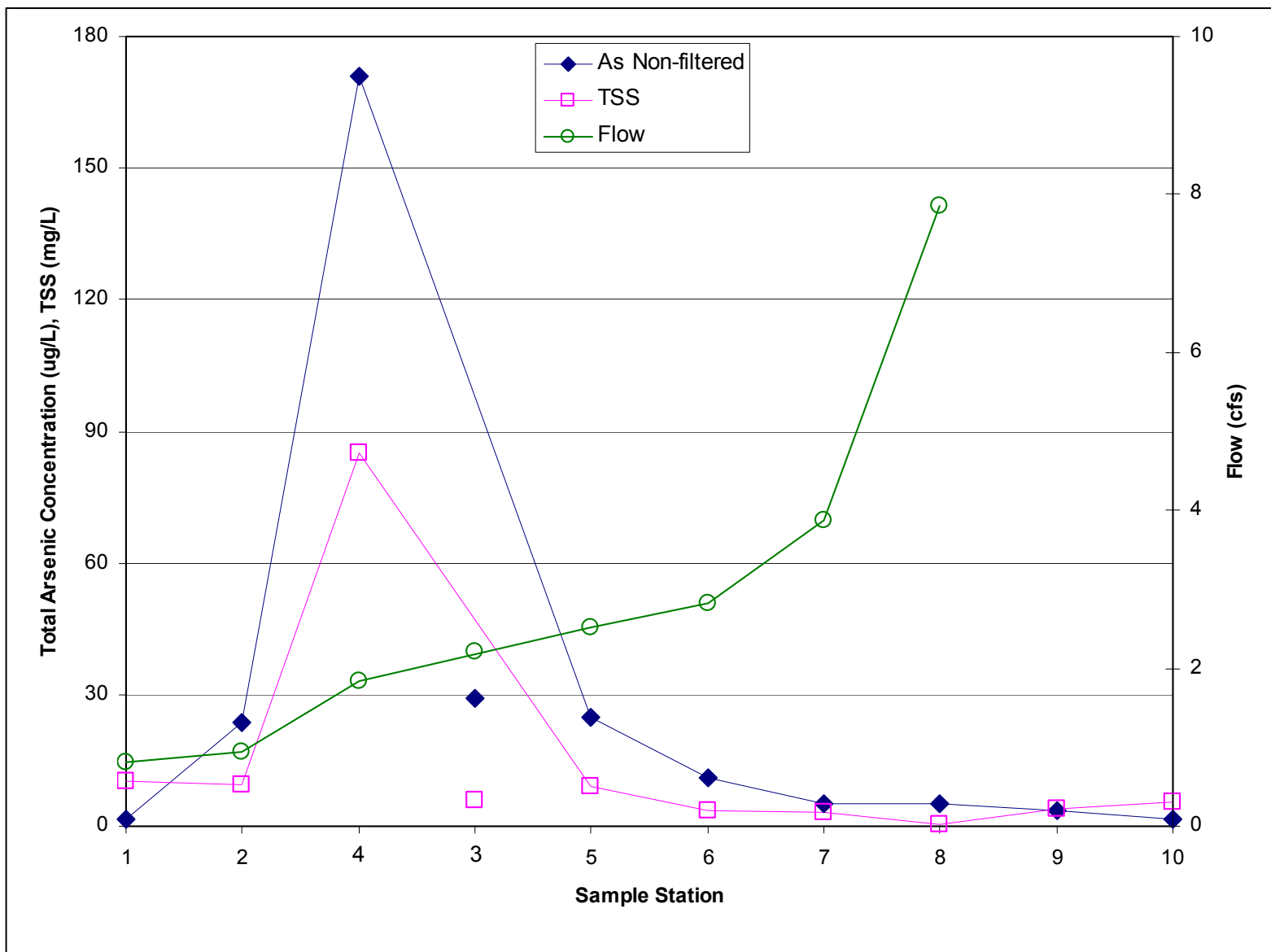


Figure 4-3: Total Arsenic and TSS per Sample Station During the December 17, 2001 Baseflow Sampling Event

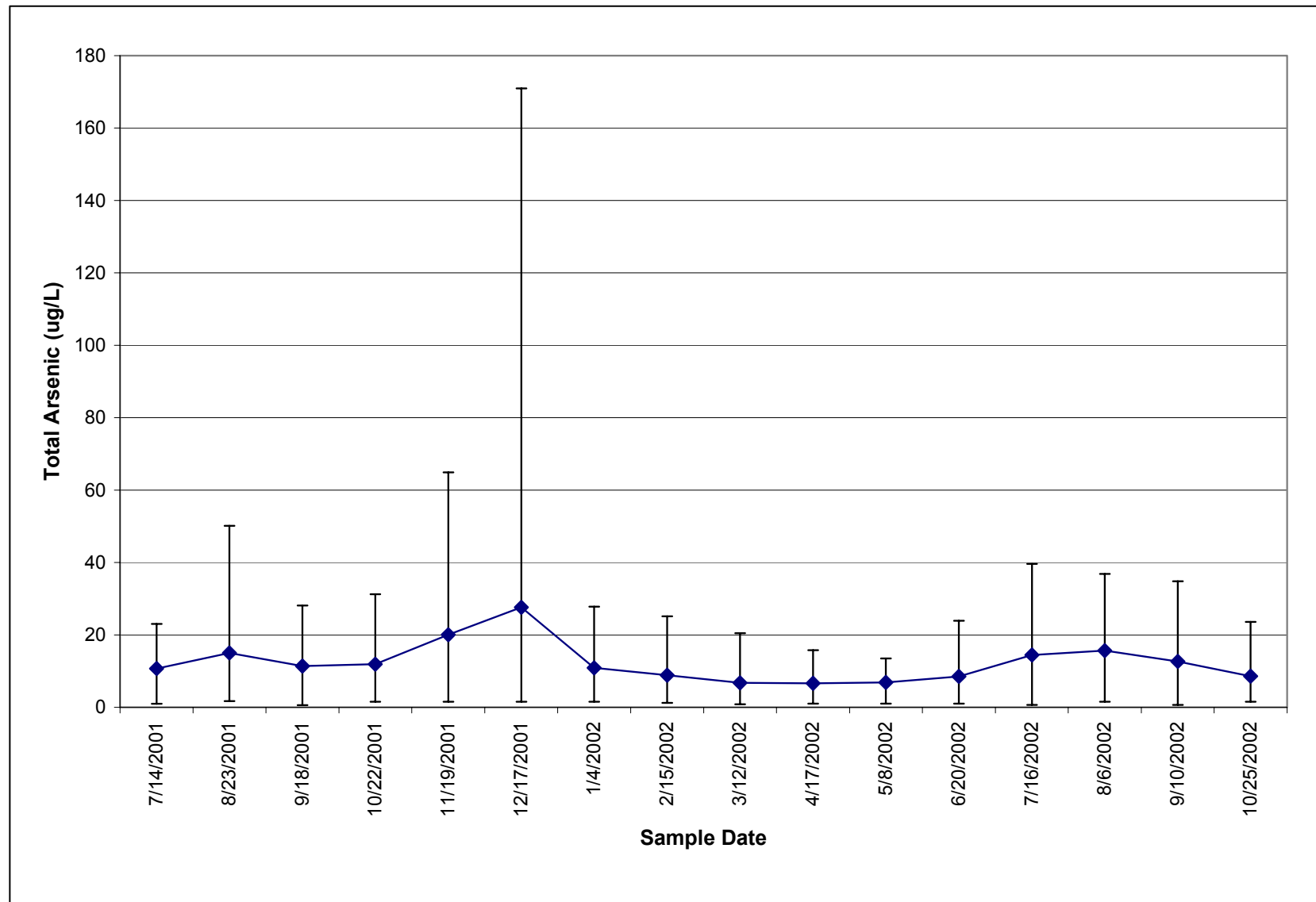


Figure 4-4: Average Total Arsenic Concentrations per Sampling Date During Baseflow Conditions

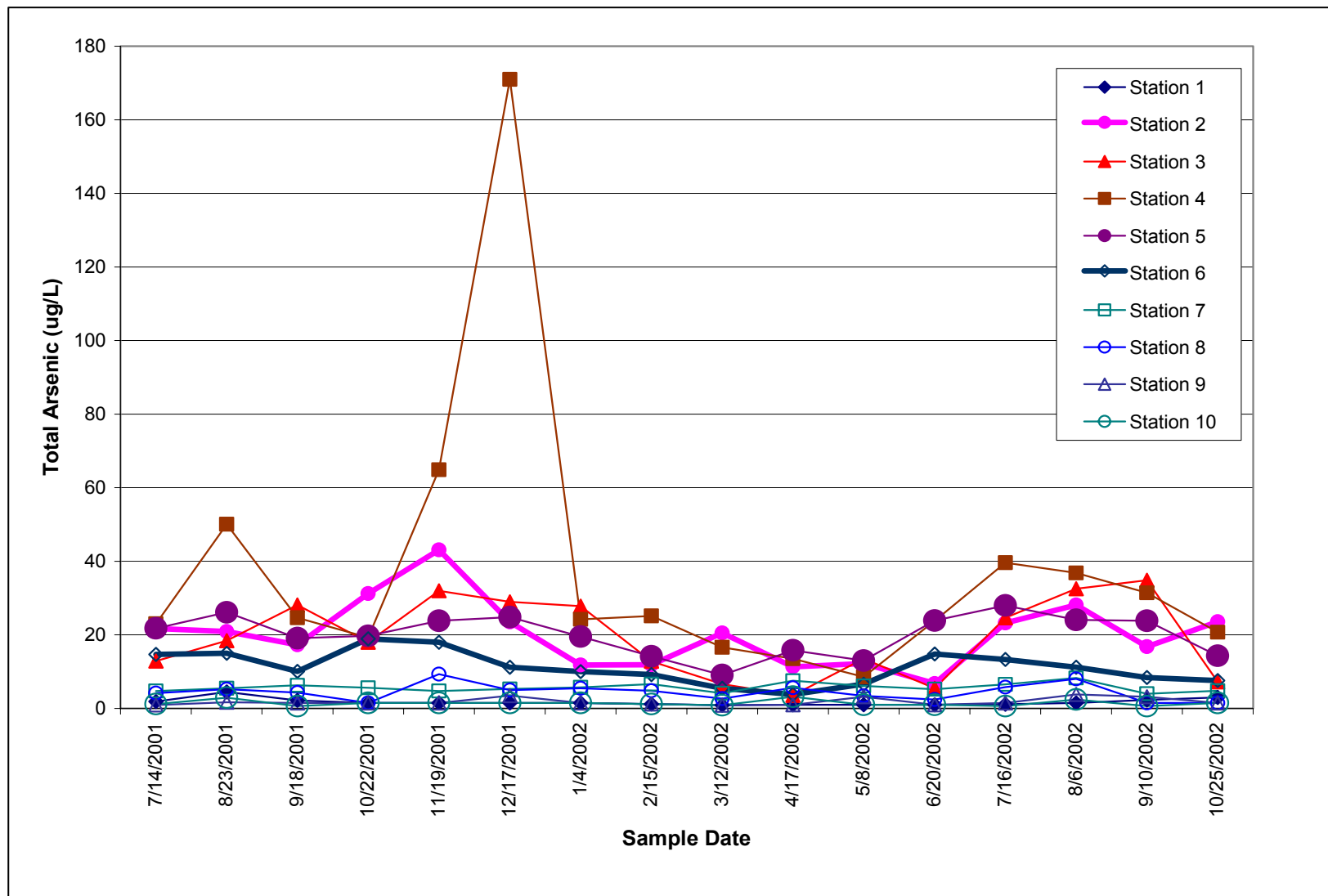


Figure 4-5: Total Arsenic Concentrations per Sampling Date During Baseflow Conditions

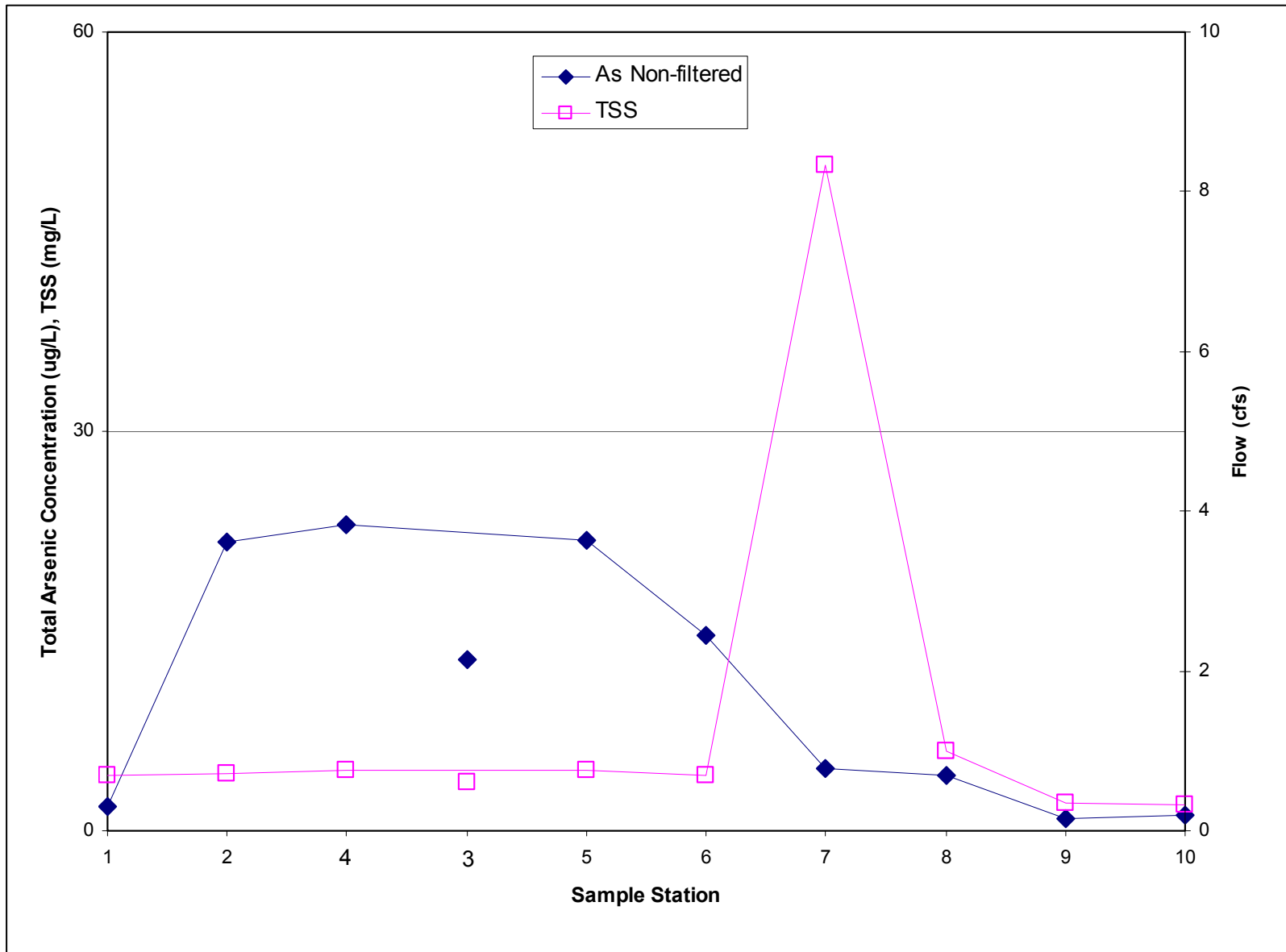


Figure 4-6: Total Arsenic and TSS per Sample Station During the July 14, 2001 Baseflow Sampling Event
(No Measured Flow Data Available for This Event)

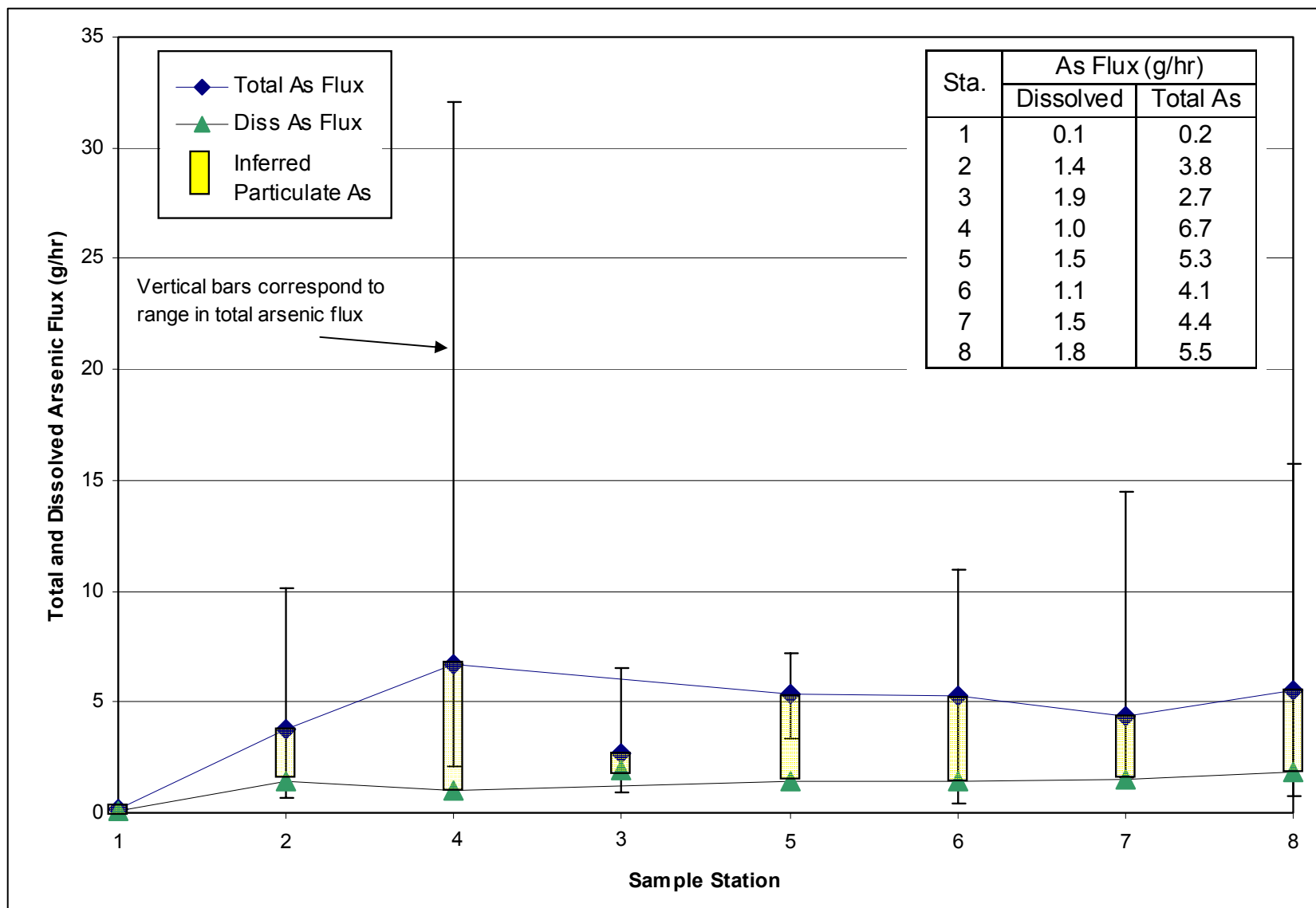


Figure 4-7: Average Total and Dissolved Arsenic Flux per Sample Station During Baseflow Conditions

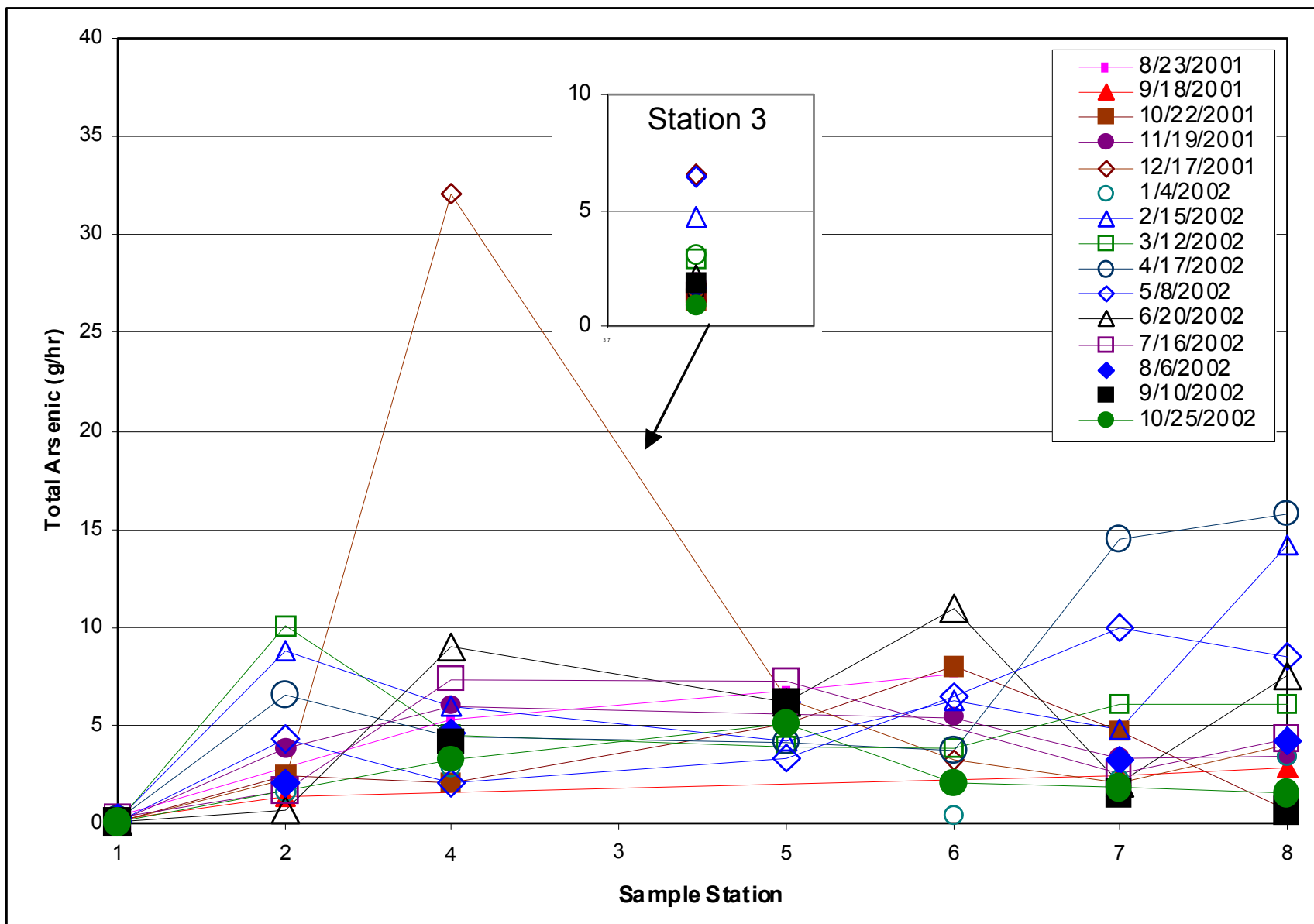


Figure 4-8: Total Arsenic Flux at each Sample Station for each Baseflow Event

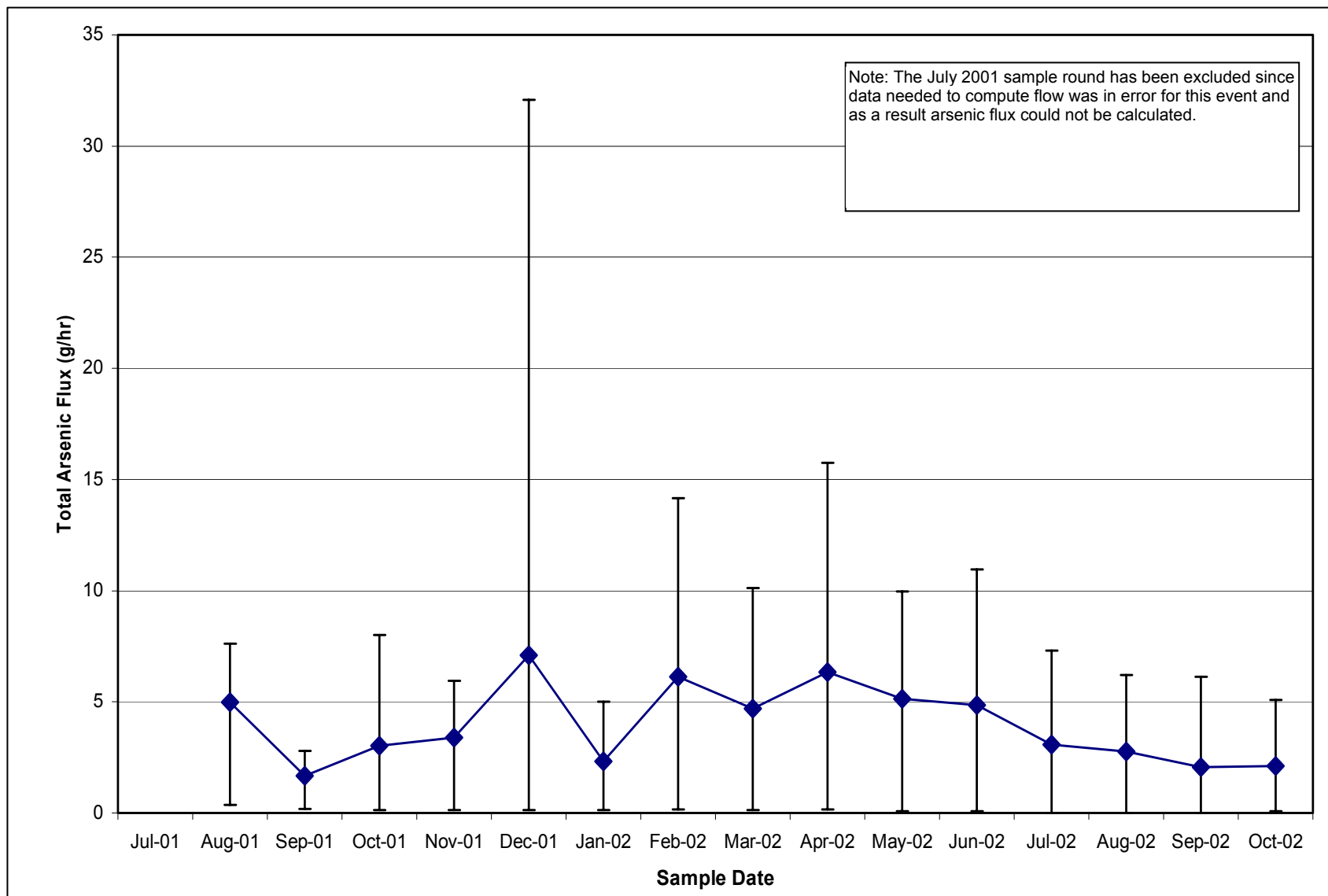


Figure 4-9: Average Total Arsenic Flux per Sample Date During Baseflow Conditions

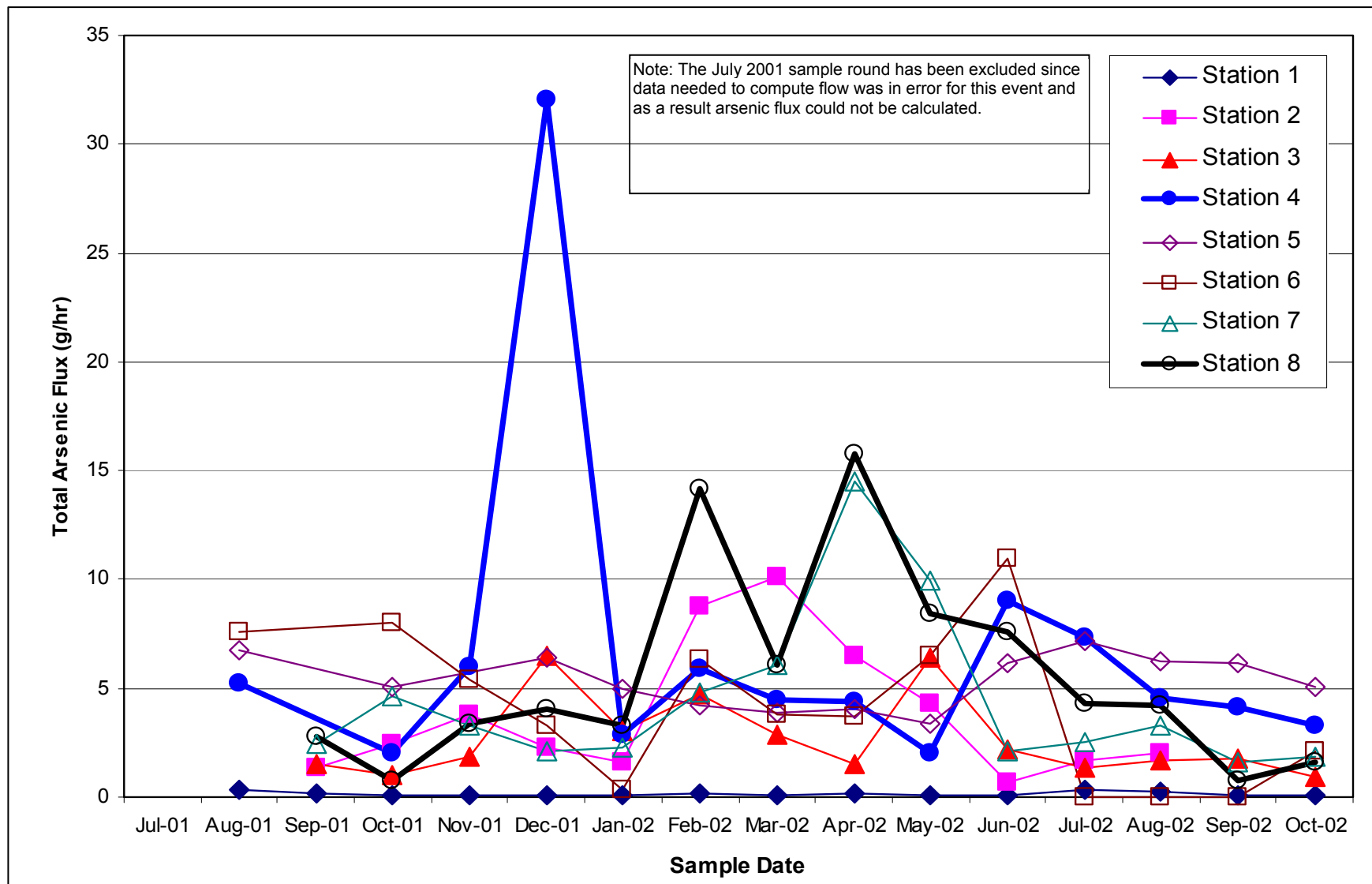


Figure 4-10: Total Arsenic Flux per Sample Date and Station During Baseflow Conditions

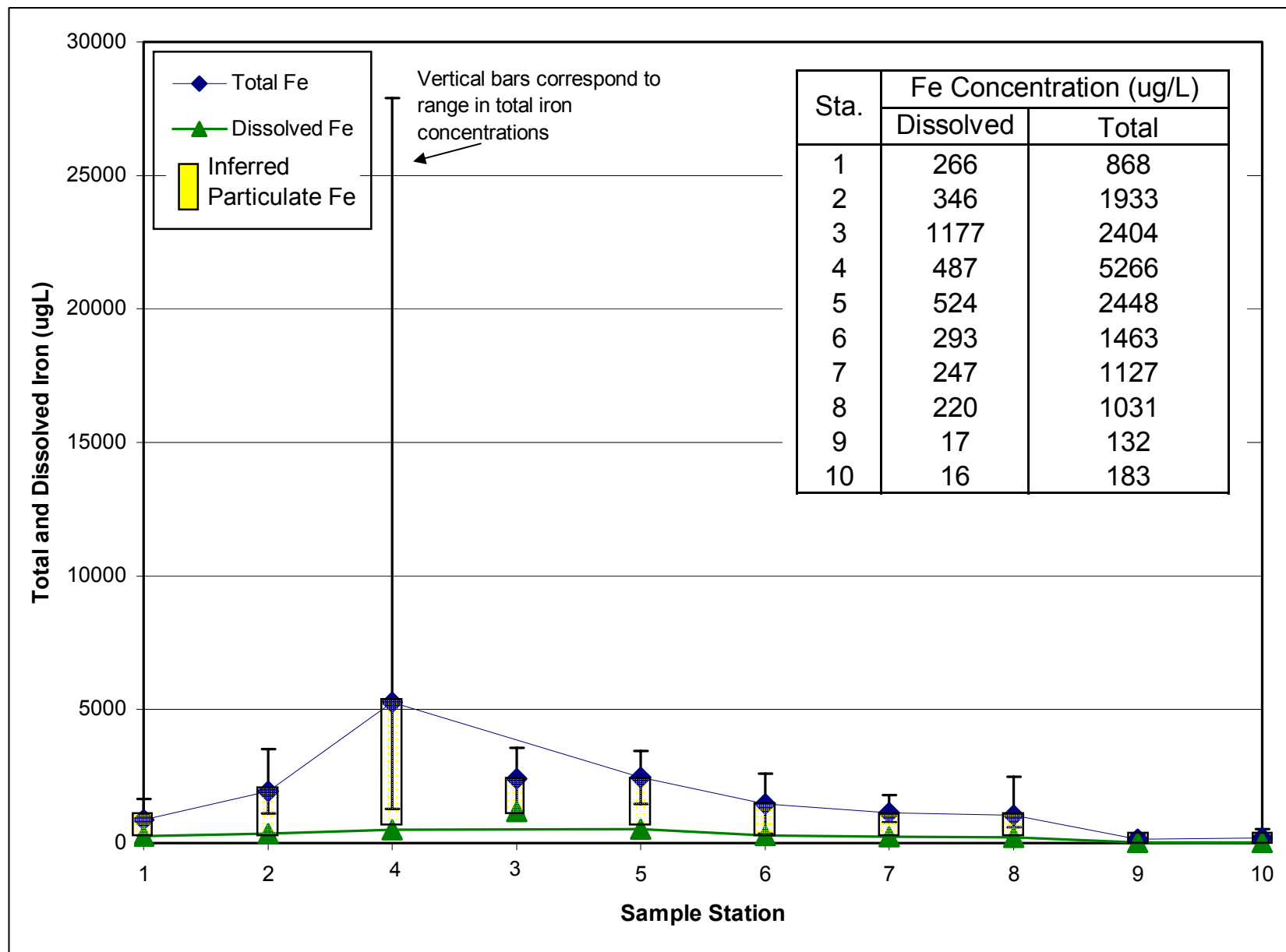


Figure 4-11: Average Total and Dissolved Iron Concentrations per Sample Station During Baseflow Conditions

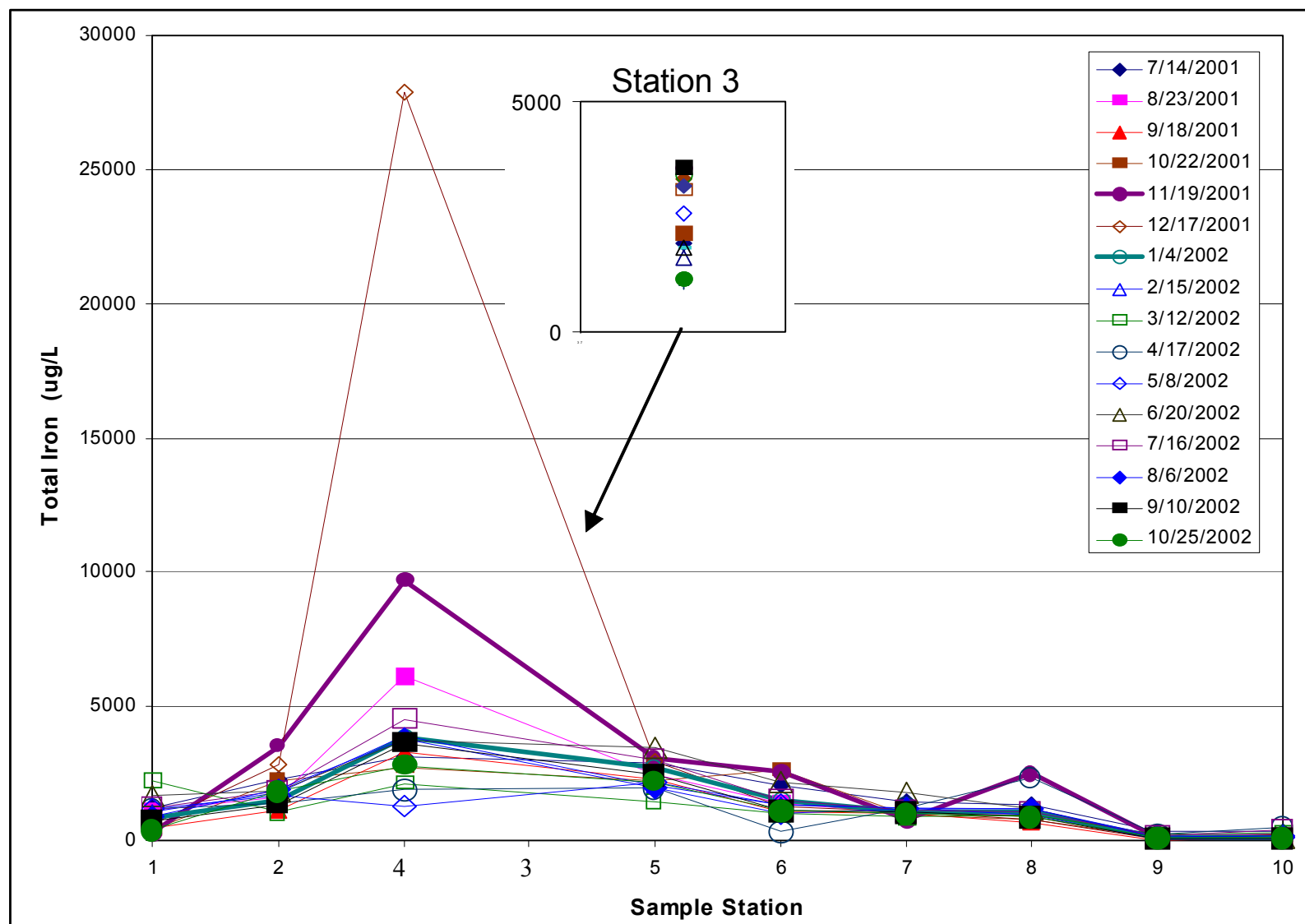


Figure 4-12: Total Iron Concentrations per Sample Station During each Baseflow Sampling Date

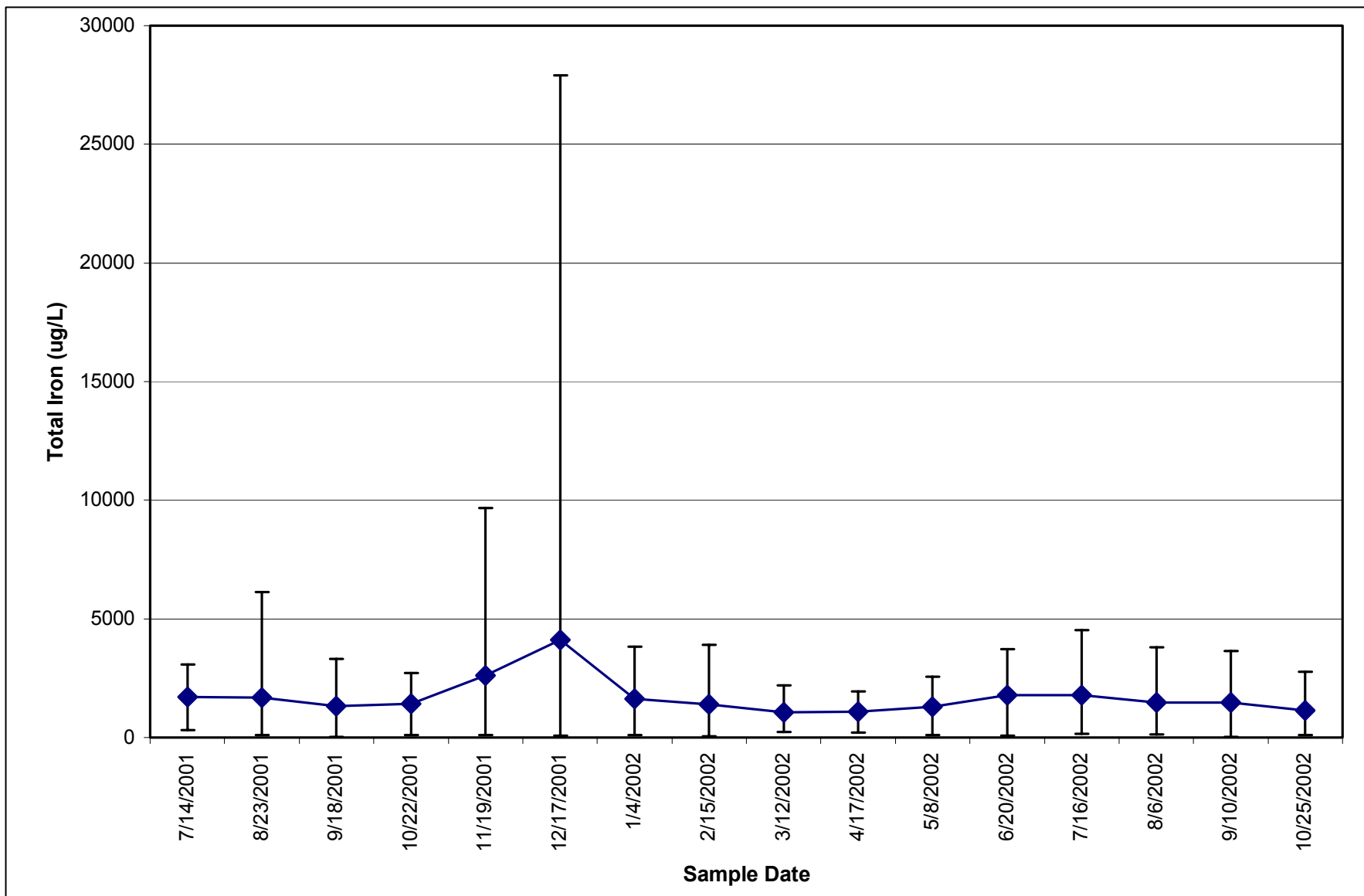


Figure 4-13: Average Total Iron Concentrations per Sample Date During Baseflow Conditions

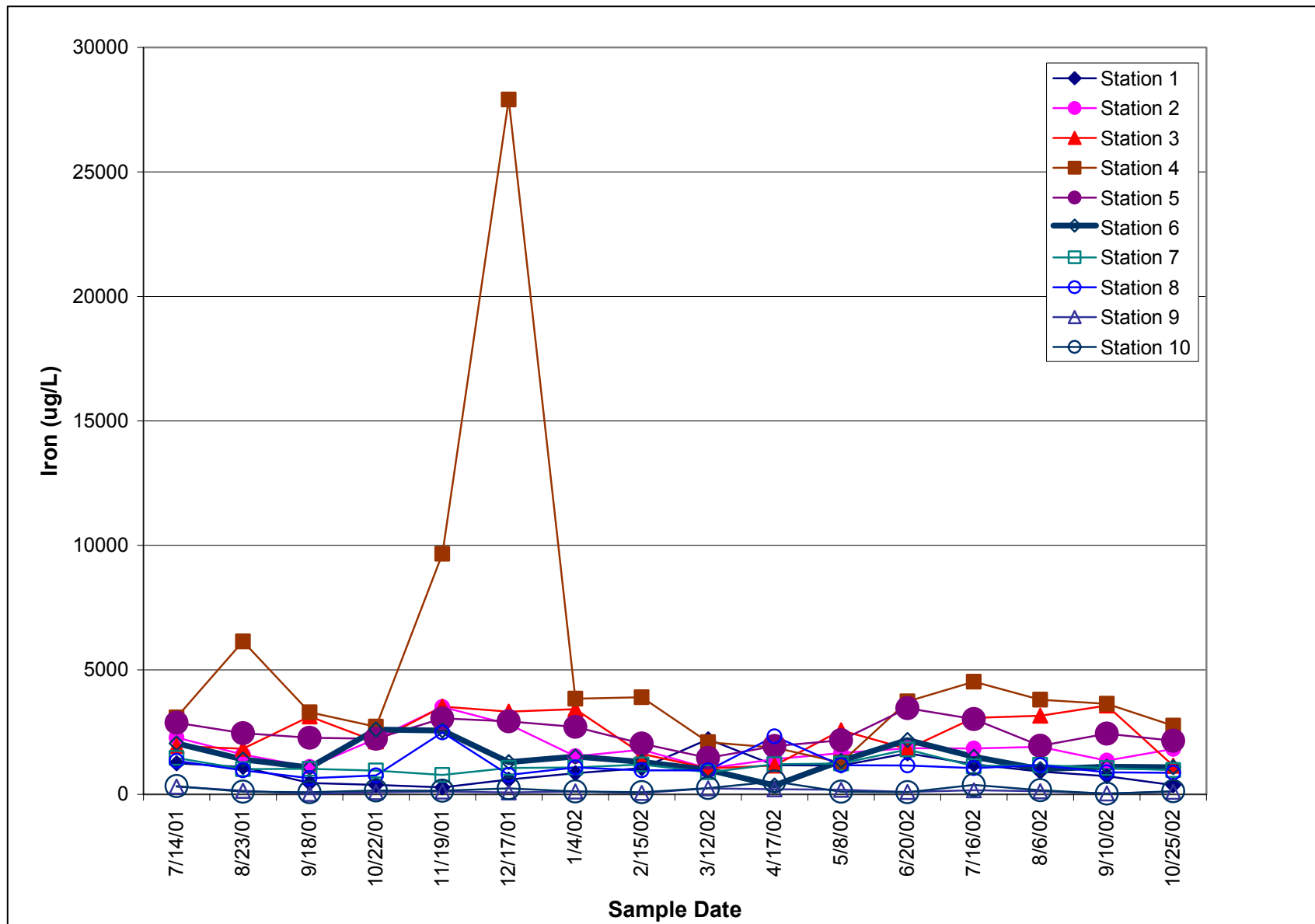


Figure 4-14: Total Iron Concentrations per Sample Date During Baseflow Conditions

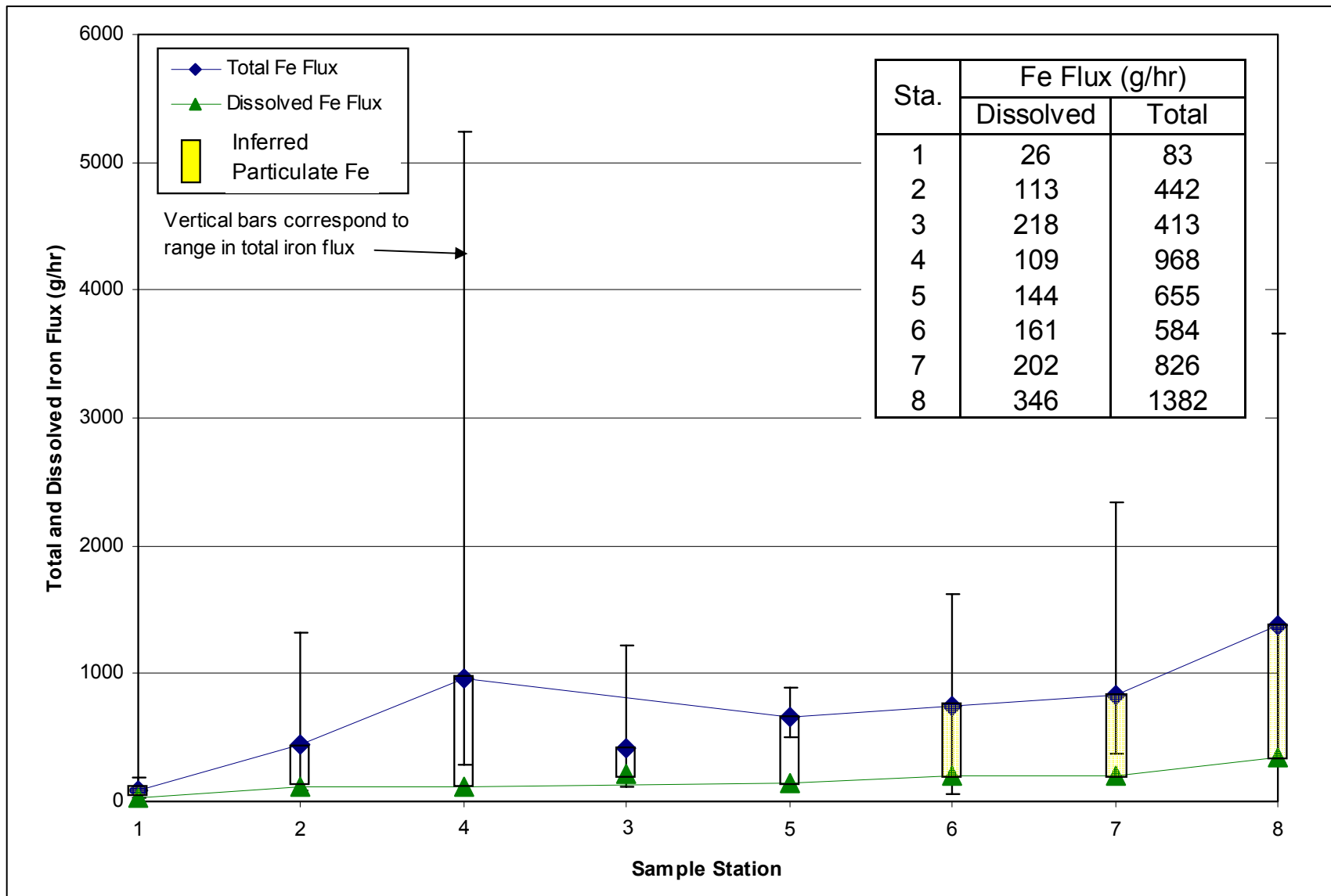


Figure 4-15: Average Total and Dissolved Iron Flux per Sample Station During Baseflow Conditions

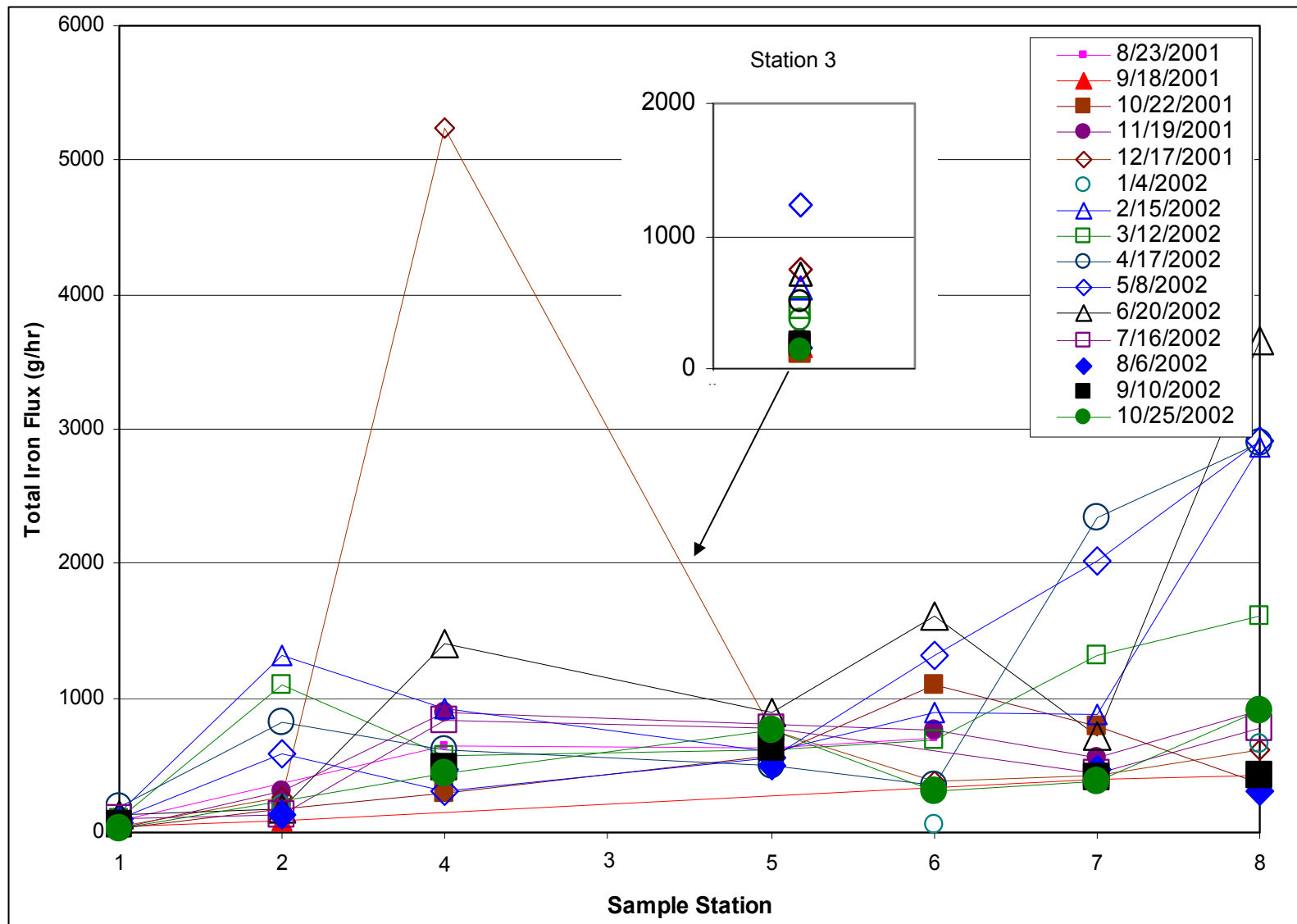


Figure 4-16: Total Iron Flux at each Sample Station for each Baseflow Event

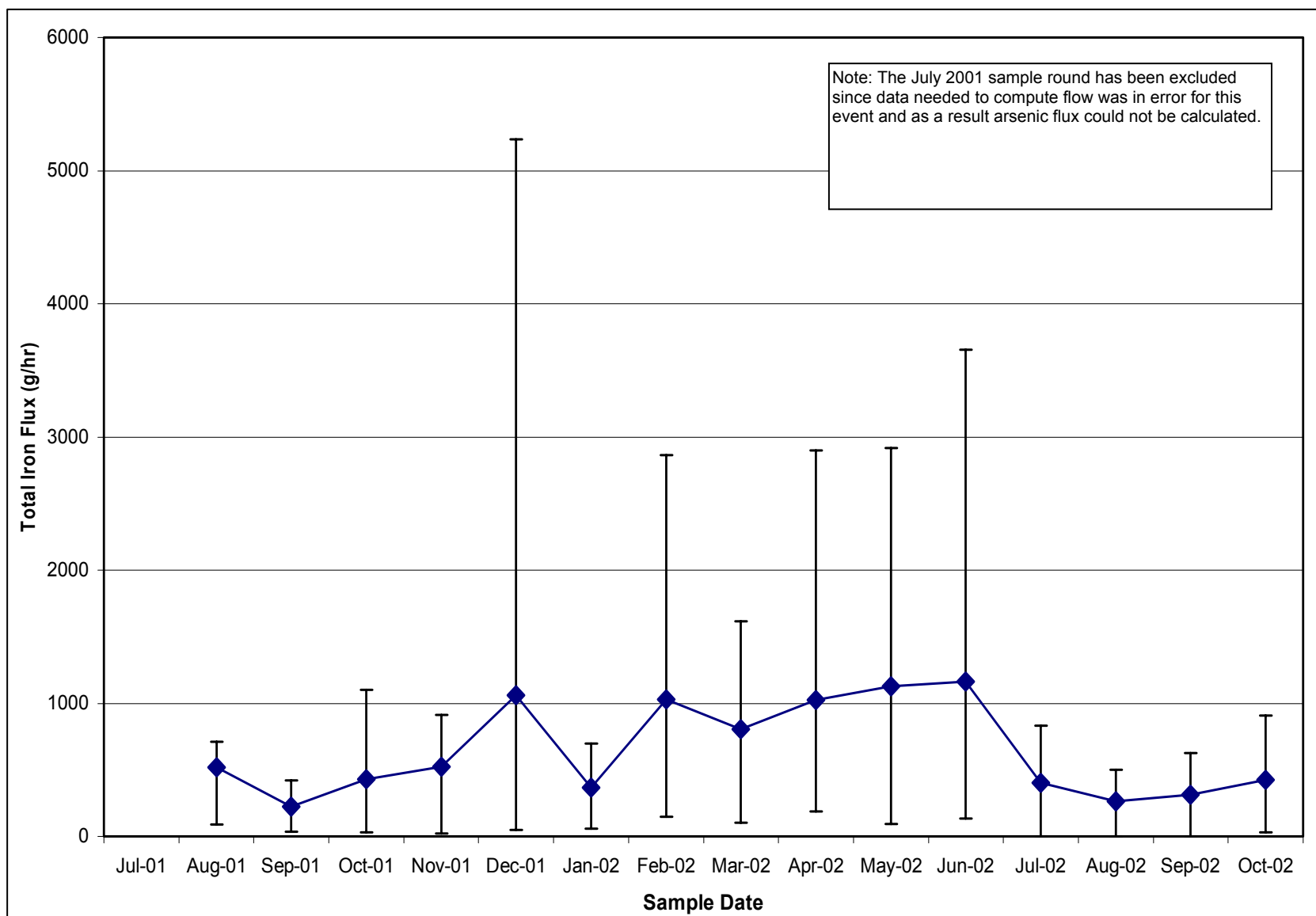


Figure 4-17: Average Total Iron Flux per Sampling Date During Baseflow Conditions

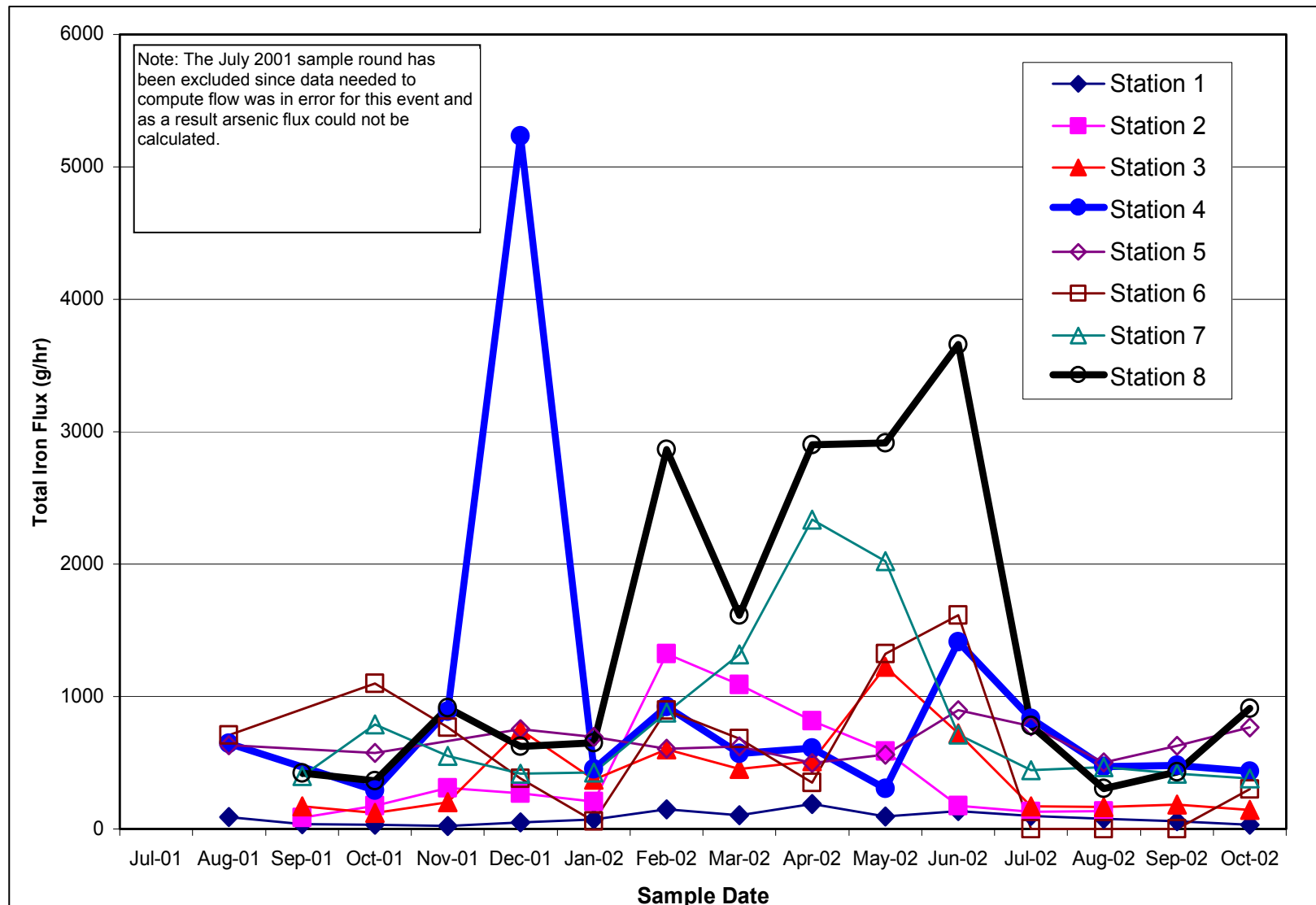


Figure 4-18: Total Iron Flux per Sample Date and Station During Baseflow Conditions

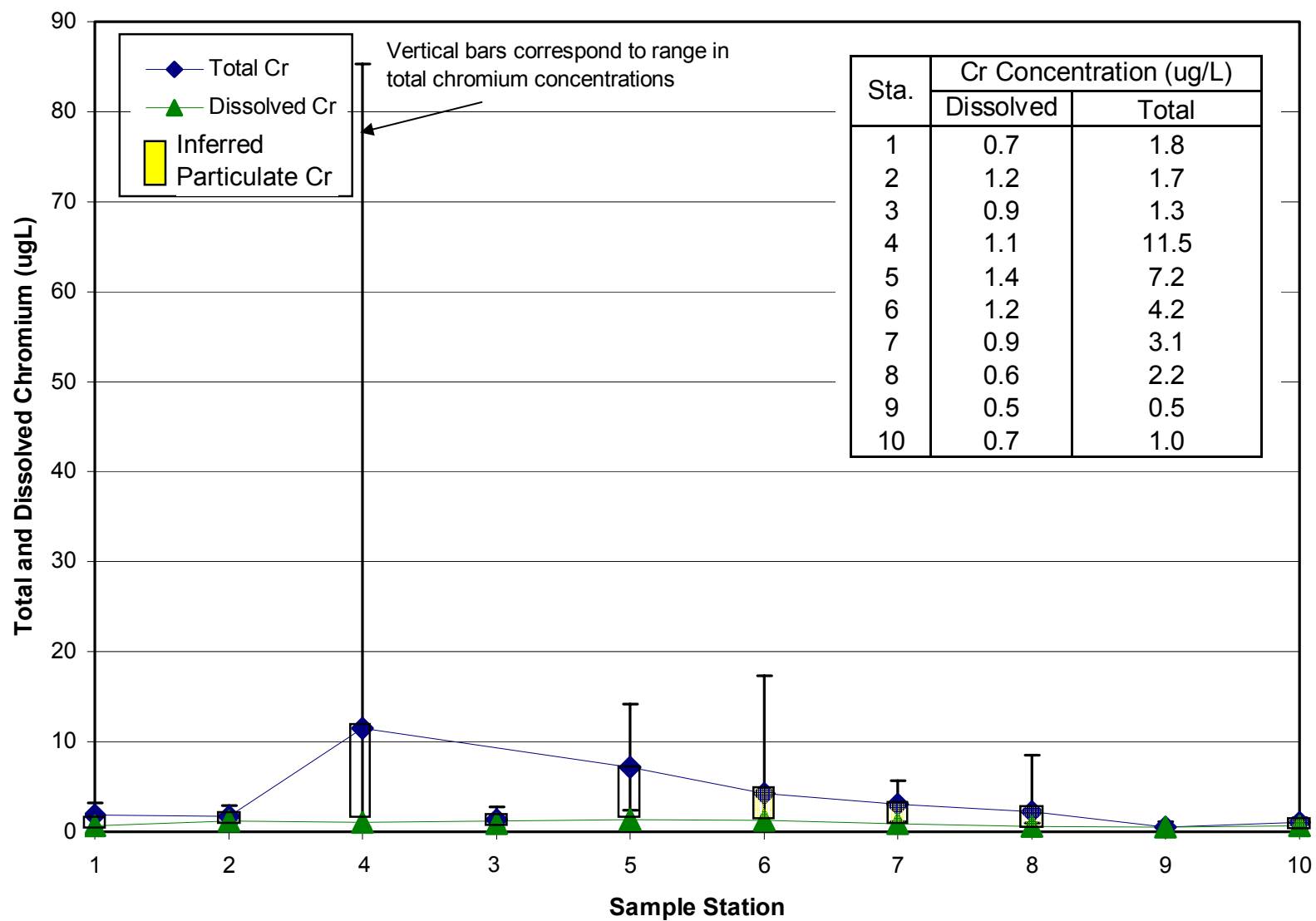


Figure 4-19: Average Total and Dissolved Chromium Concentrations per Sample Station During Baseflow Conditions

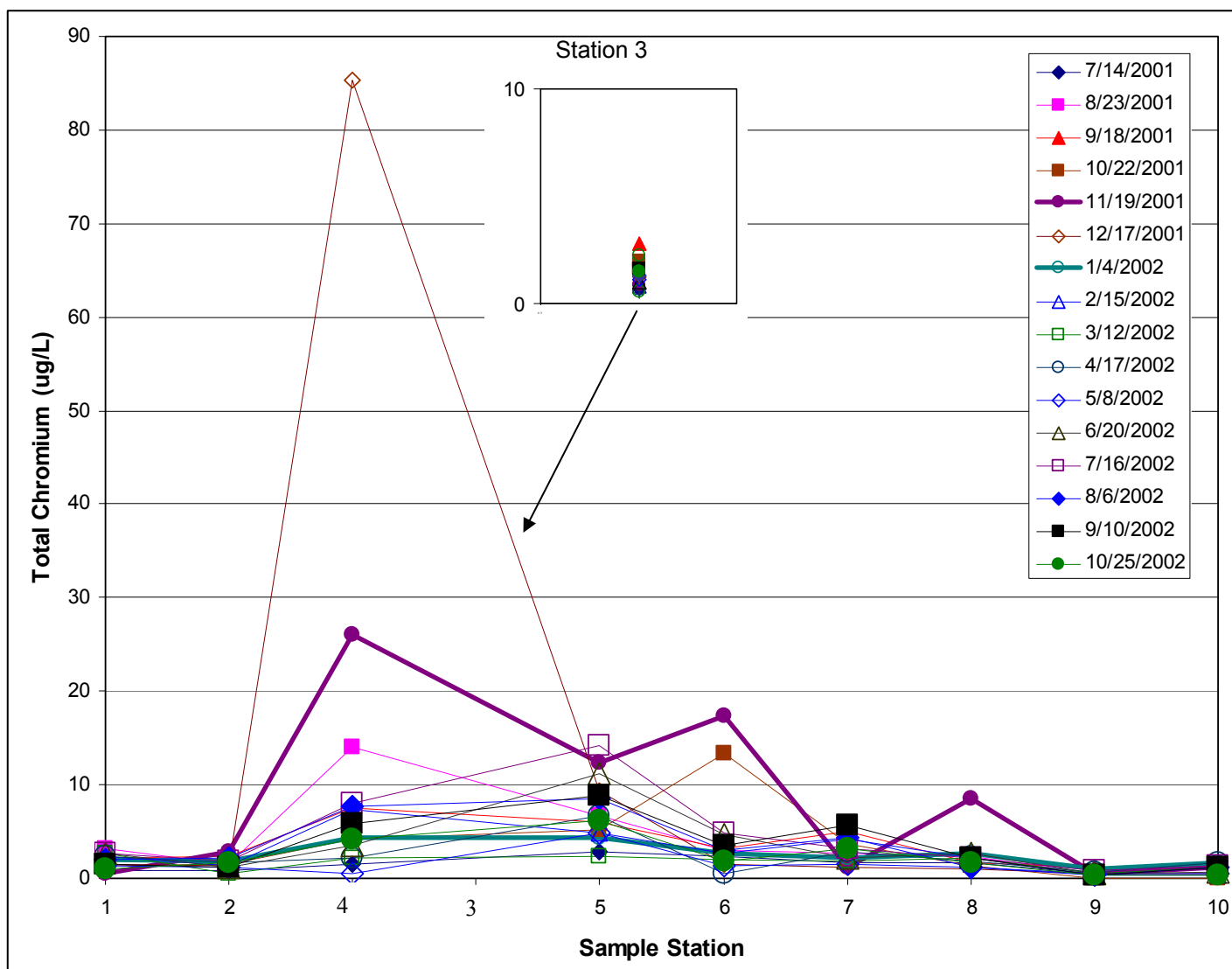


Figure 4-20: Total Chromium Concentrations per Sample Station During each Baseflow Sampling Date

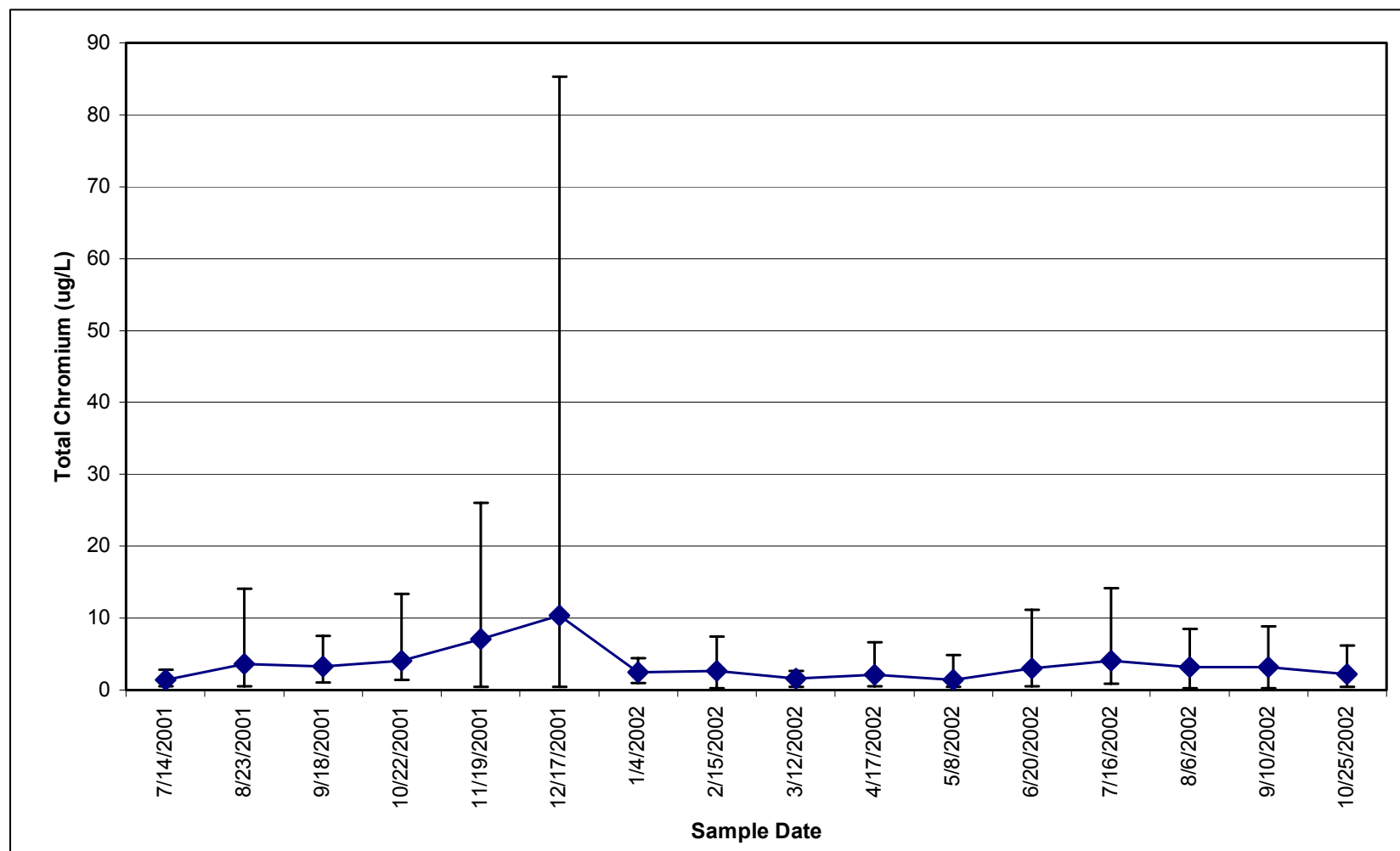


Figure 4-21: Average Total Chromium Concentrations per Sample Date During Baseflow Conditions

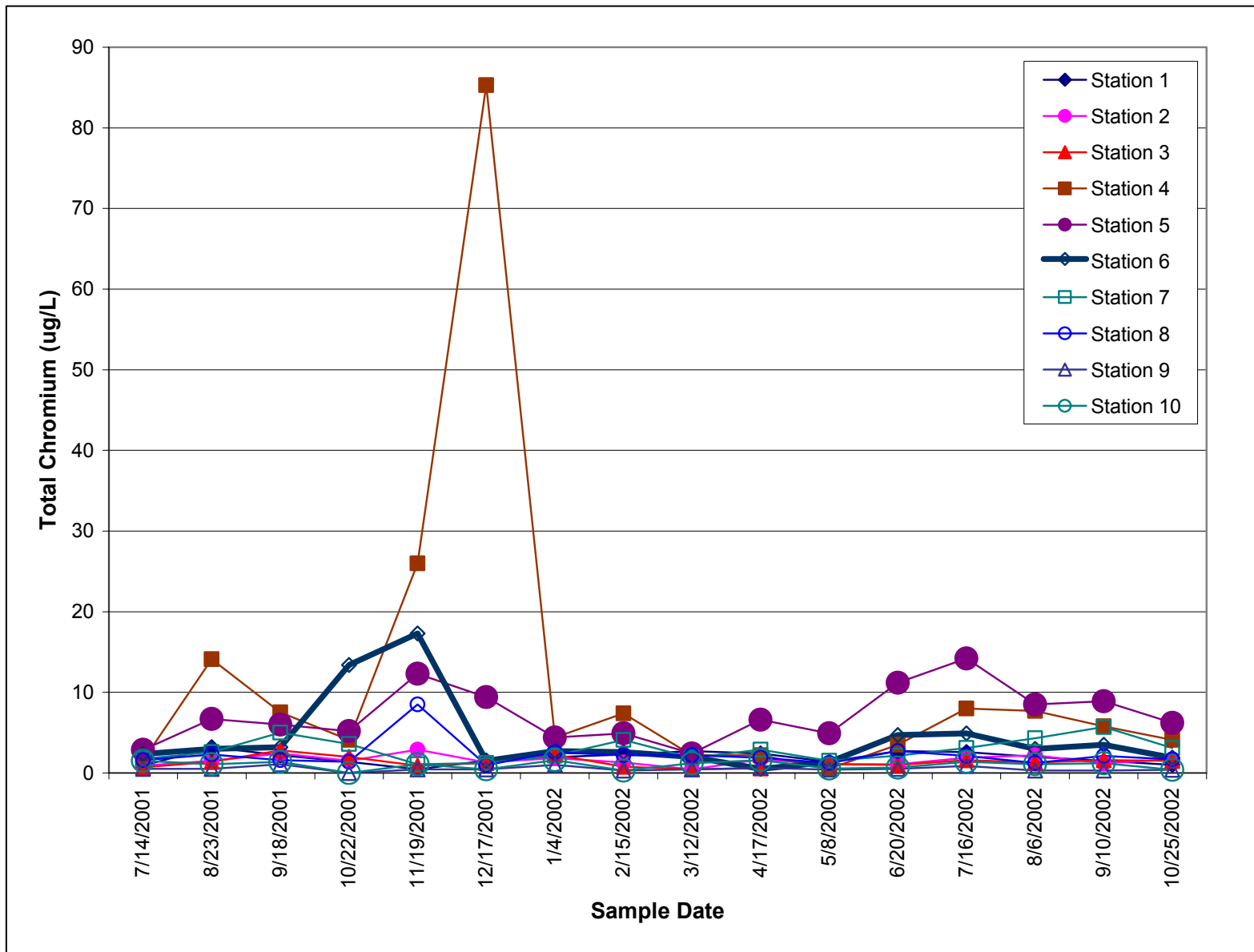


Figure 4-22: Total Chromium Concentrations per Sampling Date During Baseflow Conditions

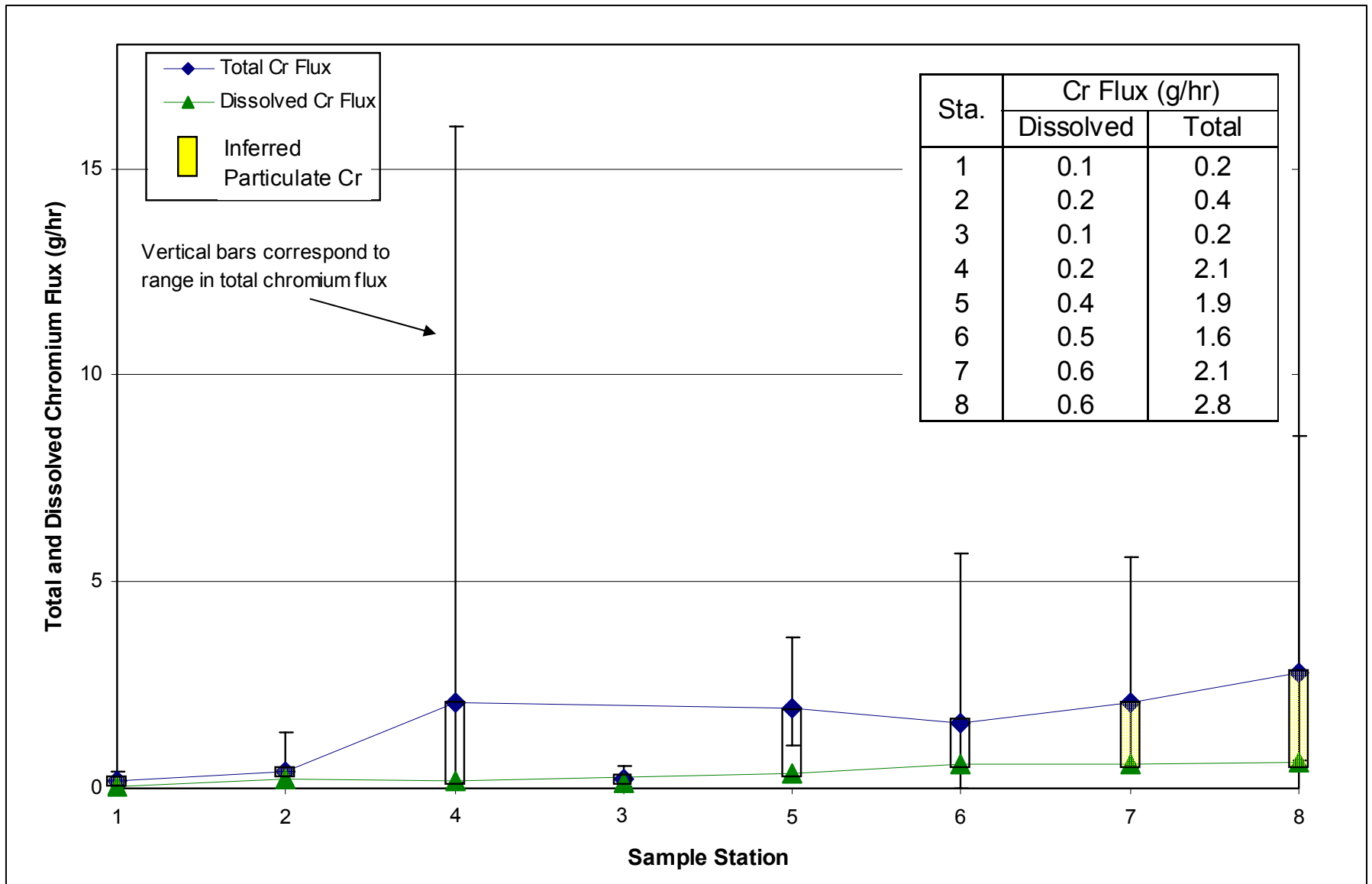


Figure 4-23: Average Total and Dissolved Chromium Flux per Sample Station During Baseflow Conditions

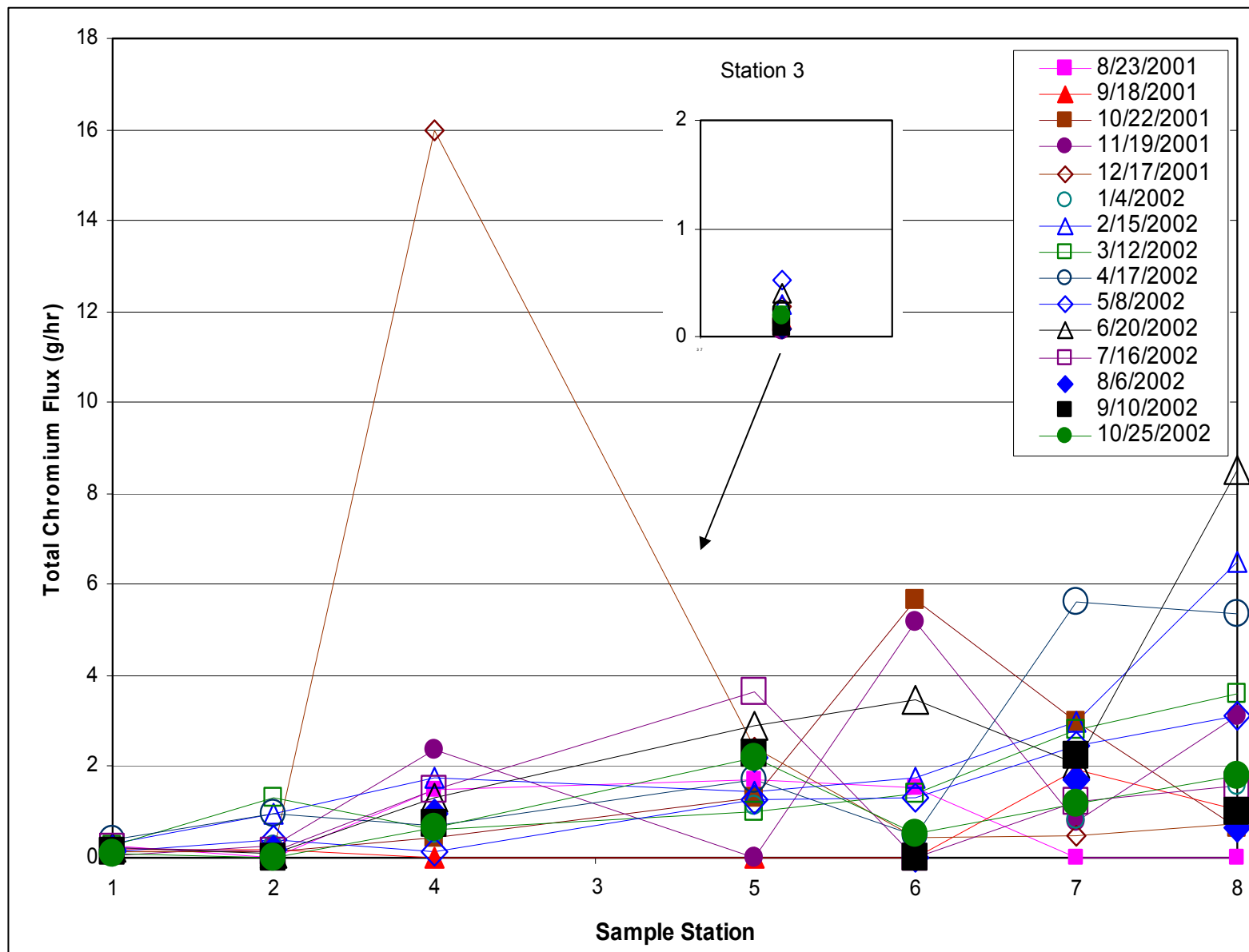


Figure 4-24: Total Chromium Flux at each Sample Station for each Baseflow Event

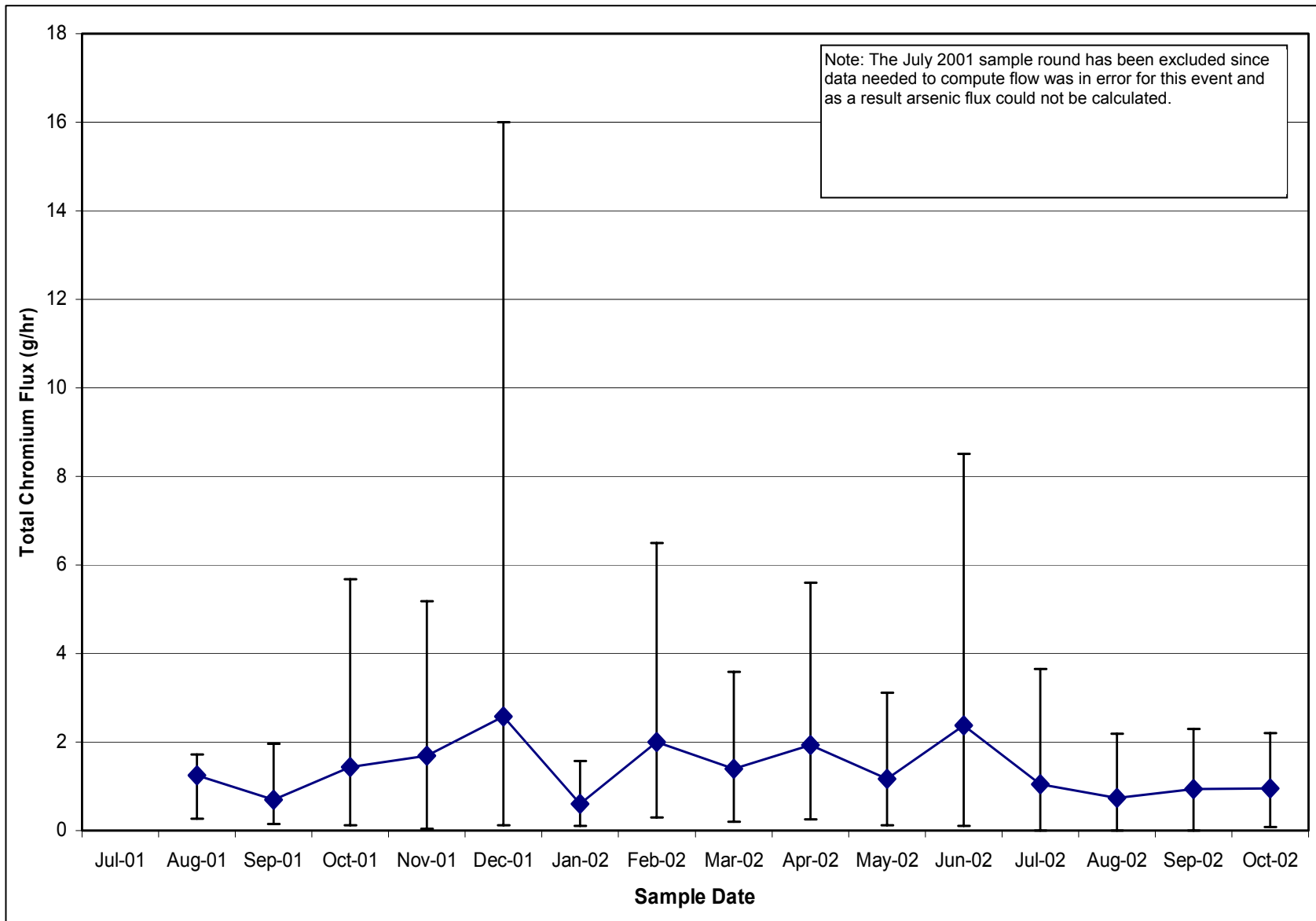


Figure 4-25: Average Total Chromium Flux per Sample Date During Baseflow Conditions

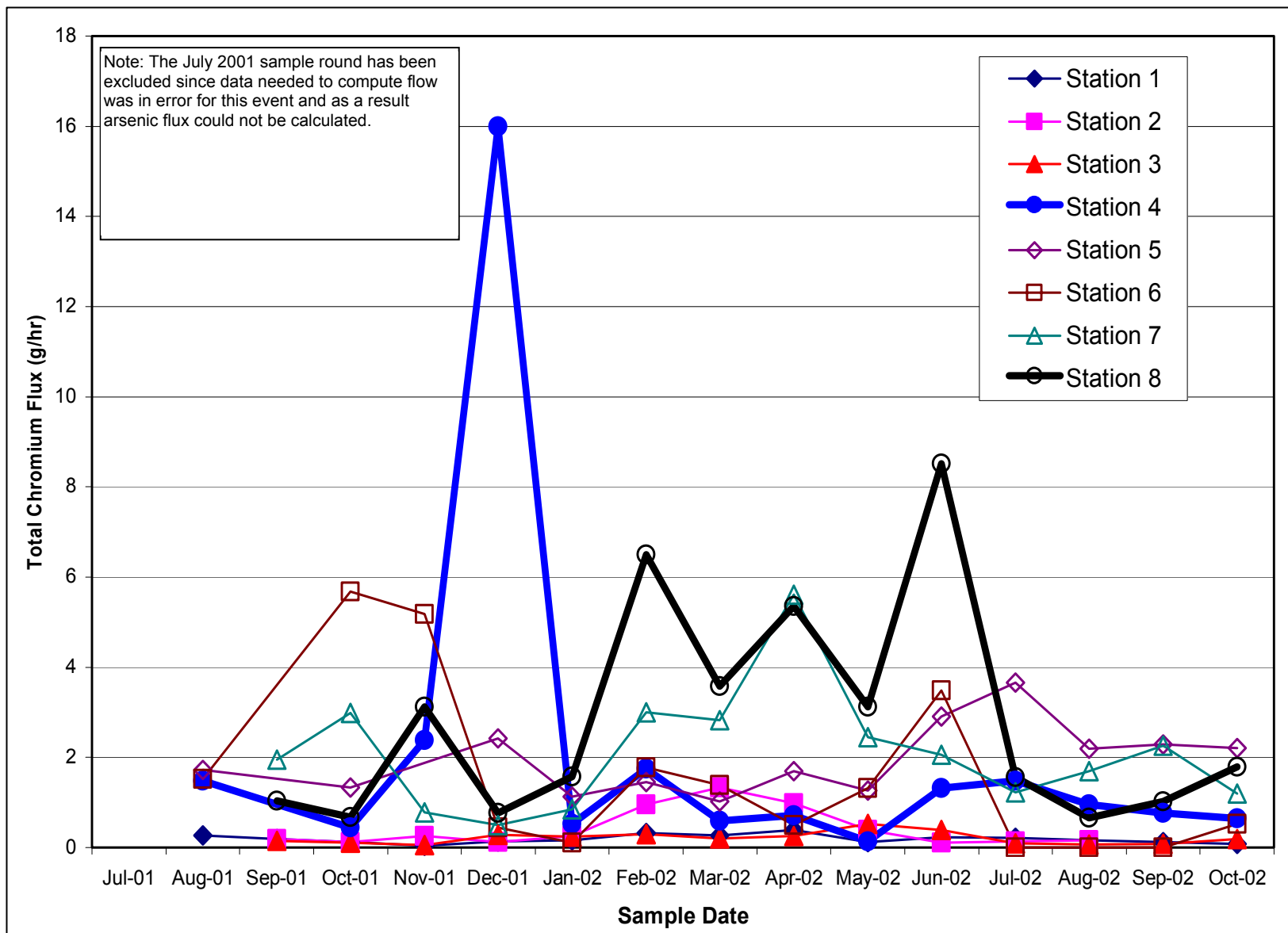


Figure 4-26: Total Chromium Flux per Sample Date and Station During Baseflow Conditions

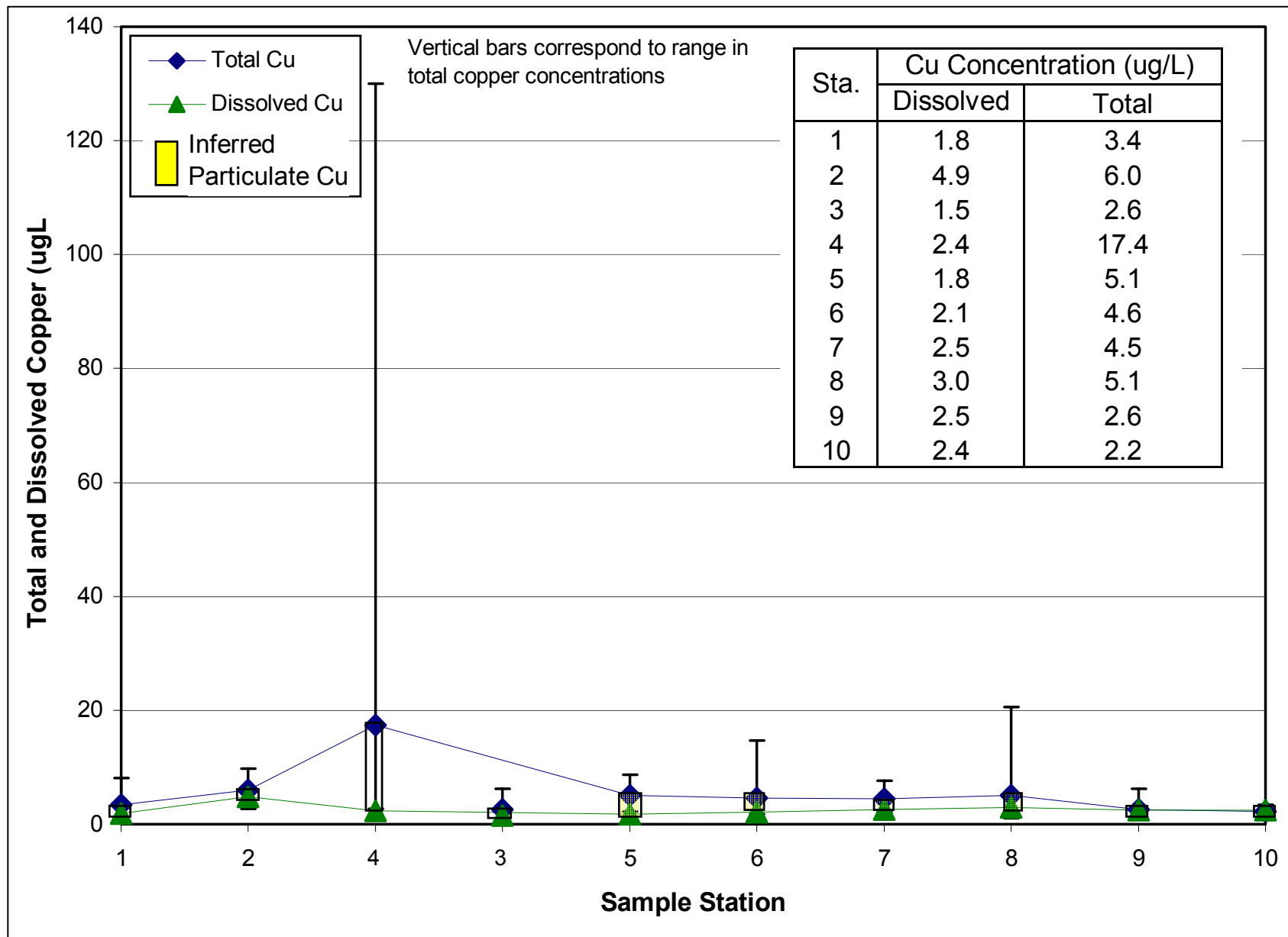


Figure 4-27: Average Total and Dissolved Copper Concentrations per Sample Station During Baseflow Conditions

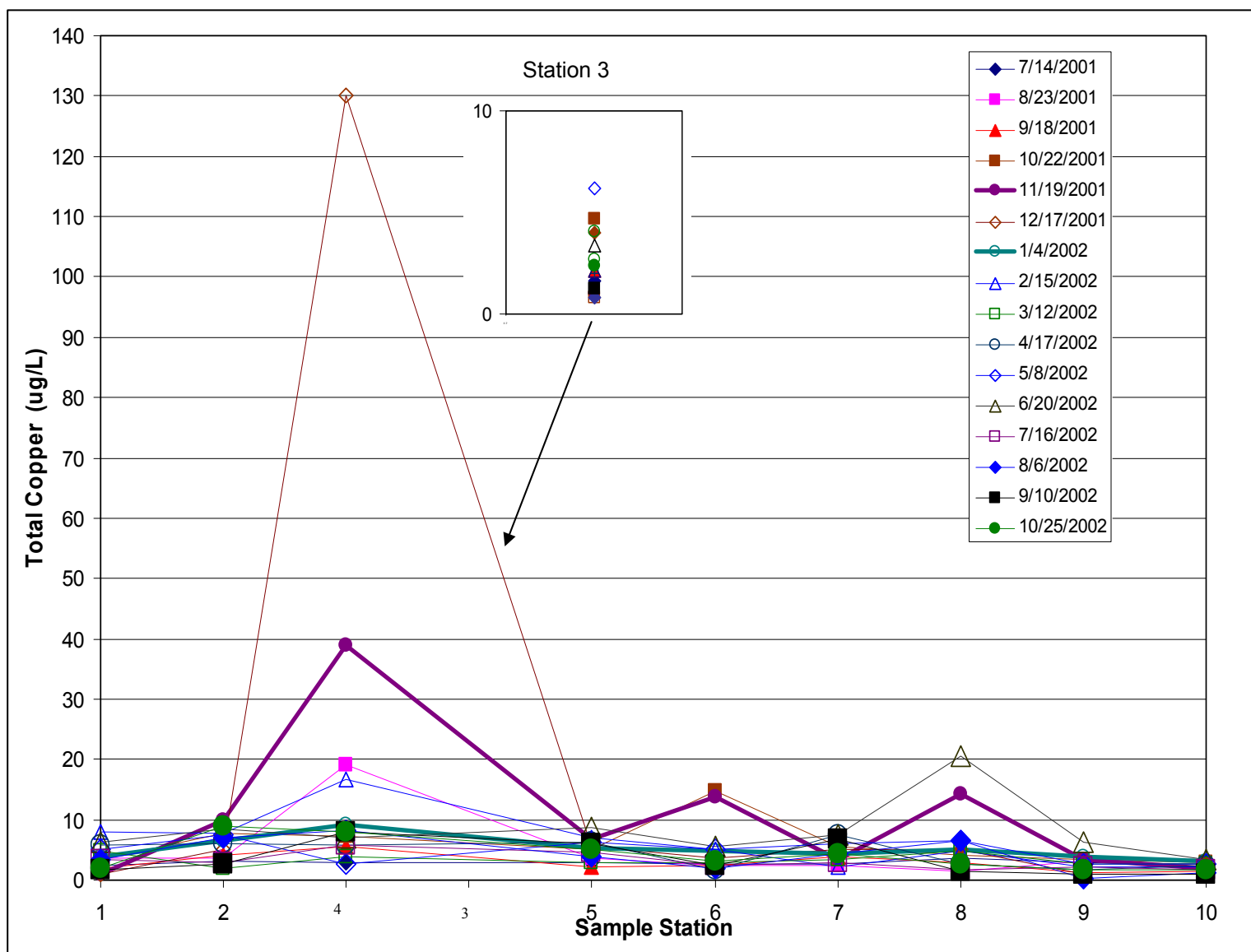


Figure 4-28: Total Copper Concentrations per Sample Station During each Baseflow Sampling Date

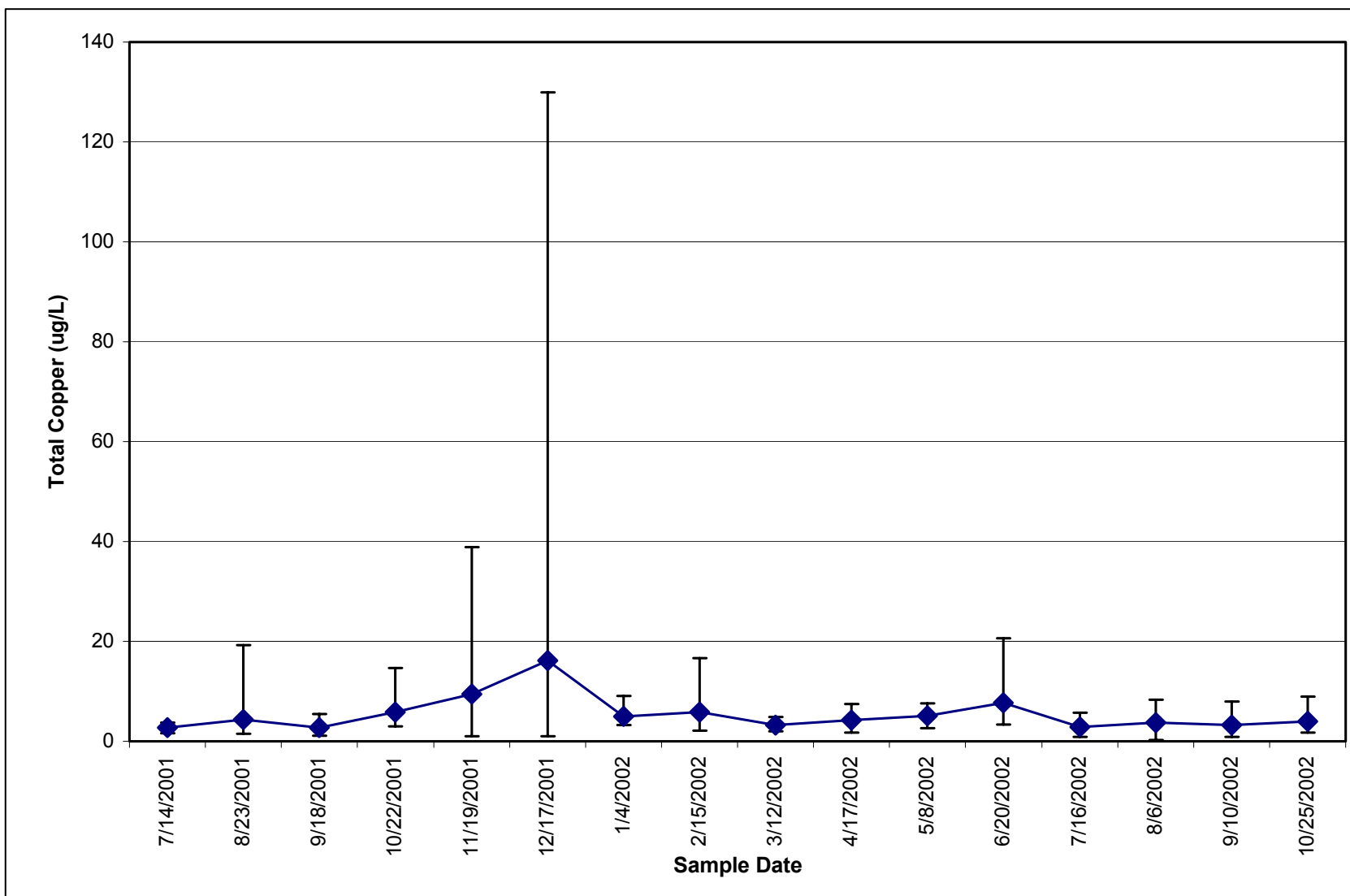


Figure 4-29: Average Total Copper Concentrations per Sample Date During Baseflow Conditions